



Facultad de Veterinaria
Universidad Zaragoza



EAEVE

Self-Evaluation
Report

Zaragoza, 2020

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INTRODUCTION

Preamble

In the context of this report, the terms “Faculty”, “Establishment” and “School” are used interchangeably and all refer to the Faculty of Veterinary Science of Zaragoza. The term “Unizar”, refers to the University of Zaragoza.

Brief story of the establishment

The Faculty of Veterinary Science is part of the University of Zaragoza, a public teaching and research institution whose aim is to serve society. The University combines almost five centuries of tradition and history (since 1542) with a constantly updated range of courses whose main mission is to generate and convey knowledge to provide students with a broad education.

The veterinary school of Zaragoza was created in 1847, being the second establishment for veterinary education at national level. However, the status of subordinated school was given and, as result, just 3 year syllabus was provided. In 1971, all national syllabus were unified and it became a five year education programme; finally, in 1943 it developed into the Faculty of Veterinary. The current curriculum was established in 2010-2011 and is led by the national and European legislation and the EAEVE supervision.

Previous ESEVT Visitations

The Faculty of Zaragoza was visited by the EAEVE in February of 2006 and the following 2 category- 1 deficiencies were found:

The amount of intramural hands-on clinical training in the core course

The Faculty engagement in farm animal teaching and clinical services must be improved.

The report of the EAEVE visiting team was very well received by the Faculty which took immediate action and invested considerable efforts to improve these deficiencies, namely regarding:

The numbers of hours of theoretical lectures were substantially decreased, as well as an increase in the number of hours of the practical activities.

The quality of the practical activities within each course was remarkably improved thanks to a number of new experimental education projects

The discipline called “estancias” (practical training) was made obligatory for all students and increased in number from 217 to 455 hours.

The practical training on the farm are now closely supervised and monitored.

The FVZ hired a number of veterinary practitioners with the position of Associated Lectures in the fields of swine practice, bovine practice, ovine practice and poultry practice.

The FVZ was revisited in March 2010 and the chairman, Stefano Romagnoli, stressed how impressed he was how everything had been improved and that the requirements have been exceeded by far. It was therefore decided unanimously by the Committee to list the FVZ as “Approved Establishment”.

A brief example of the main achievements improved in the 2010 syllabus:

- Implementation of new clinical activities in basic subjects of the first courses.
- Improvements in several clinical subjects and new clinical activities in the 4th and 5th course.
- Increase in clinical cases workload as a result of several agreements signed with private clinics, animal protection associations and farms to develop a clinical teaching in several species, and also due to an increase in the clinical activity in our Veterinary Hospital (number of cases visited and number of hospitalization days, in small animals and equine).
- It is compulsory for every student to complete 150 hours of core supervised external practices.
- Establishing of agreements with commercial and governmental farms involving different animal species.
- Coordination of the practical contents taught by the Associated Teachers with external activity within the Animal Pathology Department and the Animal Production Department. New Associated Teachers with external activity have been hired for a more specialized teaching.

- Application and development of educational innovation projects from our University.

Main developments since the last Visitation

A. Main Organizational changes

A **Quality Assurance System** (QA) was implemented in 2010/2011, and since then, the Quality Assurance Committee and the Degree Assessment Committee work side by side to ensure maximum quality of the veterinary studies. Other commissions that have been created and are relevant for the veterinary degree are the Advisory Ethics Commission for Animal Experimentation and teaching procedures, as well as the Health and Safety Committee. The VTH also renewed its [regulation](#) in 2013 in order to create an academic commission. This commission is responsible of informing and coordinating teaching assistance imparted in the VTH and the conclusions are communicated to the Quality Assurance Committee. Since 2010, two different deans and teams have been leading the Faculty and several achievements have been fulfilling with the economic restrictions that has been serious in matters of stabilize the academic staff and infrastructural improvements implementation.

B. Main Curriculum changes

The implementation of the new Veterinary Degree was authorized by agreement of June 22, 2010 of the Government of Aragon (Order of June 28, 2010 of the Minister of Science, Technology and University, published in the BOA of July 14, 2010). The official nature of the degree and its registration in the RUCT was published in the Resolution of December 23, 2010 (BOE, 01/14/2011), publishing the curriculum of the Degree in Veterinary Degree in the BOE of 07/02 / 2011 and in the BOA of 09/02/2011.

The development of the teaching guidelines has been fundamental since it has specified the competences, learning outcomes, activities, resources and evaluation procedures. Access to all guides since the complete implementation of the Degree in Veterinary Medicine, with its first promotion in the 2014-2015 academic year, can be found on the degree web page that keeps the University of Zaragoza updated through the Degree Section and Master

During the years of implementation of the degree, no substantial modifications of the original report have been requested ([Verification Report](#)), however if it has been necessary to make modifications related to the Royal Decree 96/2014 that recognized the Veterinary Degree as equivalent to Master's level (Spanish Framework for Qualification for Higher Education, MECES, level 3).

The percentage of presence of the students, for the best assistance training in the Veterinary Degree, has been increased.

C. Main facilities and equipment changes

Bearing in mind the restrictions to implement facilities and equipment due to the economic crisis that has been affected University budget, several improvements has been implemented from the last visitation, namely regarding:

- New study room with 70 places.
- Two new computer classrooms, 24 and 8 places respectively
- Creation of the multipurpose Room (93 m²) and the Master room (43.3 m²) being used as a study rooms, teaching space, meeting or seminar rooms.
- New spaces have been adapted (in the Library) to facilitate the realization of teamwork.
- Renewal of projection equipment.
- Veterinary Clinic Hospital:
 - Remodelling of Isolation Areas for Small Animals.
 - Opening of a new clinic room for suspected cases of transmissible diseases
 - Opening of a riding arena for horse handling
 - Adaptation of two boxes as farrowing rooms
- Remodelling and installation of the Agro-food Institute of Aragon (IA2)
- Remodelling of the necropsy rooms.
- Creation of a Vehicle disinfection infrastructure.
- Transport of students to the agreed farms by preprogramed taxi.
- Adaptation of a vehicle to transport cadavers and clinical cases.
- Animal Experimentation Service in assistance with teaching. Several improvements have been undertaken in order to adapt spaces according to the specifications of the new animal experimentation regulations:

- Acquisition of cages for rabbits
- Acquisition of a track loader
- Installation of automatic feeding distribution system for poultry
- Improvements in calf sleeve
- Soil adaptation teaching hall
- Adequacy of the slurry collection system
- Outdoor fencing

• Likewise, the following improvements have been made in equipment of the Hospital: replacement of Doppler ultrasound and vascular sealing equipment for laparoscopic surgery and for the realization of electrocardiograms, acquisition of FACO equipment and fundus chamber for ophthalmology, of a digital radiology equipment, of new computers and a monitor for the anaesthesia room and ICU.

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

ESEVT 'Uppsala' SOP May 2016





1.

Objectives and Organisation

1. + OBJECTIVES AND ORGANISATION

1.1. Factual information

1.1.1. Details of the Establishment

Official name – Facultad de Veterinaria de Zaragoza (Universidad de Zaragoza)

Address – Calle Miguel Servet, 177, 50.013 ZARAGOZA, ESPAÑA.

Phone +0034 976 76 16 18; Fax number

Email – dirvetez@unizar.es

Website address - www.unizar.es; <http://veterinaria.unizar.es>

Establishment's Head – Professor Faustino Manuel Gascón Pérez (Full Professor)

Person responsible for the professional, ethical, and academic affairs of the VTH – Professor Maria Teresa Verde Arribas (Full Professor)

Official authority overseeing the Establishment – Rector of the University of Zaragoza – Professor José Antonio Mayoral Murillo.

1.1.2. Summary of the Establishment Strategic Plan with an updated SWOT analysis, the mission and objectives

The Strategic Plans since the implementation of the Degree can be fully consulted in <http://veterinaria.unizar.es/organizacion/junta-facultad>. This plan is updated annually and the most recent proposal can be consulted in the following link (Strategic Plan [2019](#)).

This plan is merged from the different objectives and transversal themes of action, as well as from specific lines for students, and academic and support staff.

The **mission** of the Veterinary Faculty is to promote the development of teaching and contribute to the promotion of scientific research of the subjects included in their curricula and, through their different activities, being present in the scientific, social and cultural life, especially of Aragon, contributing to its development. Likewise, the Faculty collaborates with political, economic, cultural and citizen institutions in order to promote solidarity and cultural and social development of all citizens. To do this, we should train professionals, who seek to preserve the health of animals and the population, and the conservation of the environment.

The **objectives** are:

- a) Organization of the development of the teachings taught in the Establishment .
- b) Supervision of teaching activities of the Departments.
- c) Establish and develop continuing and postgraduate education activities.
- d) The academic management of its teachings.
- e) Modification and evaluation of the existing degree programmes.
- f) Proposal for creating new degrees as well as the modification and suppression of the existing ones.
- g) Preparation, revision and modification of the curricula of the Establishment's degrees.
- h) Supervision of any other official teachings taught in the Establishment.
- i) Administration of its budget and material resources.
- j) Proposal for hiring support staff
- k) Participation in the monitoring and control of the Faculty services, as well as the proposal to create new ones.
- l) Promotion and monitoring of national and international students and teachers exchanges, as well as of students EPT in companies and entities.
- m) Provide to the students delegation of the Faculty with the necessary resources to perform their functions.

SWOT analysis

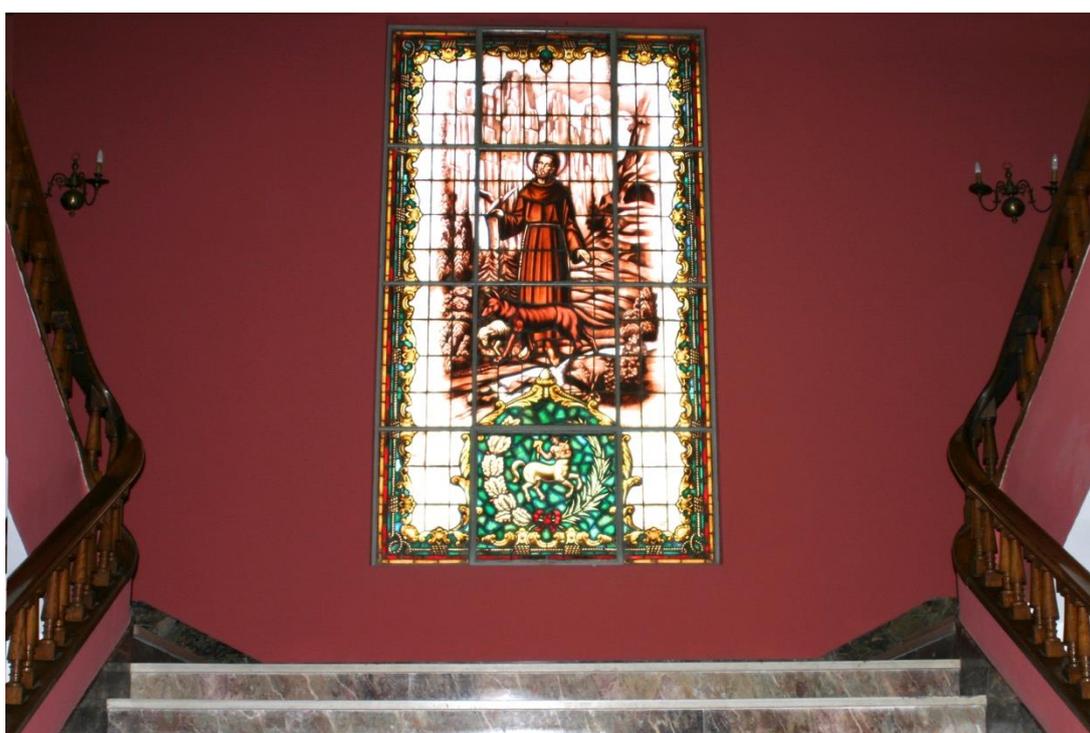
Strengths

- Long historical tradition with more than 150 years old, National and international recognition. Accredited by EAEVE in 2010
- Strategic location in Spain, being one of the richest region in agriculture and livestock.
- High demand for our Veterinary degree (1.257 number of pre-registrations, only 146 places available in 2019).
- Innovative design of the 4th and 5th year contents, which are organized as integration of subjects by species. The student learns in an integrated way clinical and productive aspects of each species, which brings them closer to professional practice.
- High quality intra-mural and extra-mural practical training in small animals, equine and food-producing animal clinics, mainly in porcine and small ruminants.
- High percentage of teachers with veterinary qualifications and experts in their fields of knowledge.
- Excellent relationships with related institutions, administrations, livestock companies and professional's animal health and production, and health areas.
- EPT are correctly planned and implemented and companies offer for its realization is very adequate.
- High level of biosafety training for students, professors and technical staff. Great social awareness with animal welfare in veterinary practice
- Active development of national and international exchange programs for students and teachers, with an excellent destination offer.
- Excellent functioning of the Tutor and Mentor programs, which clearly help students to progress in their academic and social university curriculum
- High degree of motivation and involvement of our academic and support staff and students, with high level of synergy between students and staff that allows the integral development of students.
- Leadership in research resources, with high number of research groups of excellence and national and international reference. Some teachers belong to three Research Institutes (IA2, IIAS and I3A). Also there is a OIE Reference Centre for BSE and scrapie.
- VTH with all basic and diagnosis facilities for clinical practice, both in small animals and equine
- The School has a very good Food Processing Unit that is model for many Veterinary Schools and likely the best of Spain. Our School is reference in hygiene and food technology
- The library has a quality certification and a group working space for students has been enabled.
- Success and performance indicators of the degree are higher than those provided in the verification report and meet the social demands of their environment.
- Excellent organization of students transportation to extra-mural practice sessions: small groups, using private taxis with driver, so all risks and liability are covered and in accordance with the law. 30K€ budget.
- FVZ has an in-house developed management platform that is unique in the University of Zaragoza in relation to its functionalities and the availability of the Student's Personal Area, which provides personalized schedules, customized practice groups, enrolled subjects and others self service functions.
- The Faculty is characterized by a high level of activity of the academic staff in the educational innovation field. Therefore, the support and collaboration both of the library in the training of students in Digital Competence (DigCop or e-skills), and the Digital and Multimedia Service Unit for the creation of audio-visual and digital learning material is relevant and well received.

Weakness

- Lack of autonomy in the full management of the centre.
- 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 bureaucrat duties and absence of a specialised support unit for the management of research and fundraising.
- September registration delays the formation of practice groups and destabilizes teaching.
- Introduction of B1 English level in the first year within the curriculum.
- Integration subjects present coordination difficulties due to the high number of teachers involved, and the modification of the curriculum, from animal production to chirurgical abilities.
- Very low participation of students in the satisfaction surveys.
- Lack of class attendance.
- Excessive number of teachers with temporary contract. Aging of teachers and need for greater stability
- Public funding became increasingly scarce in the last decade, constraining the development of teaching and research. Insufficient budget to manage unique infrastructures.
- Location of the campus within the urban area which prevents the construction of new facilities. Insufficient number of technical staff in clinical areas, in the VTH there is only one technician for imaging diagnosis both equine and pets.

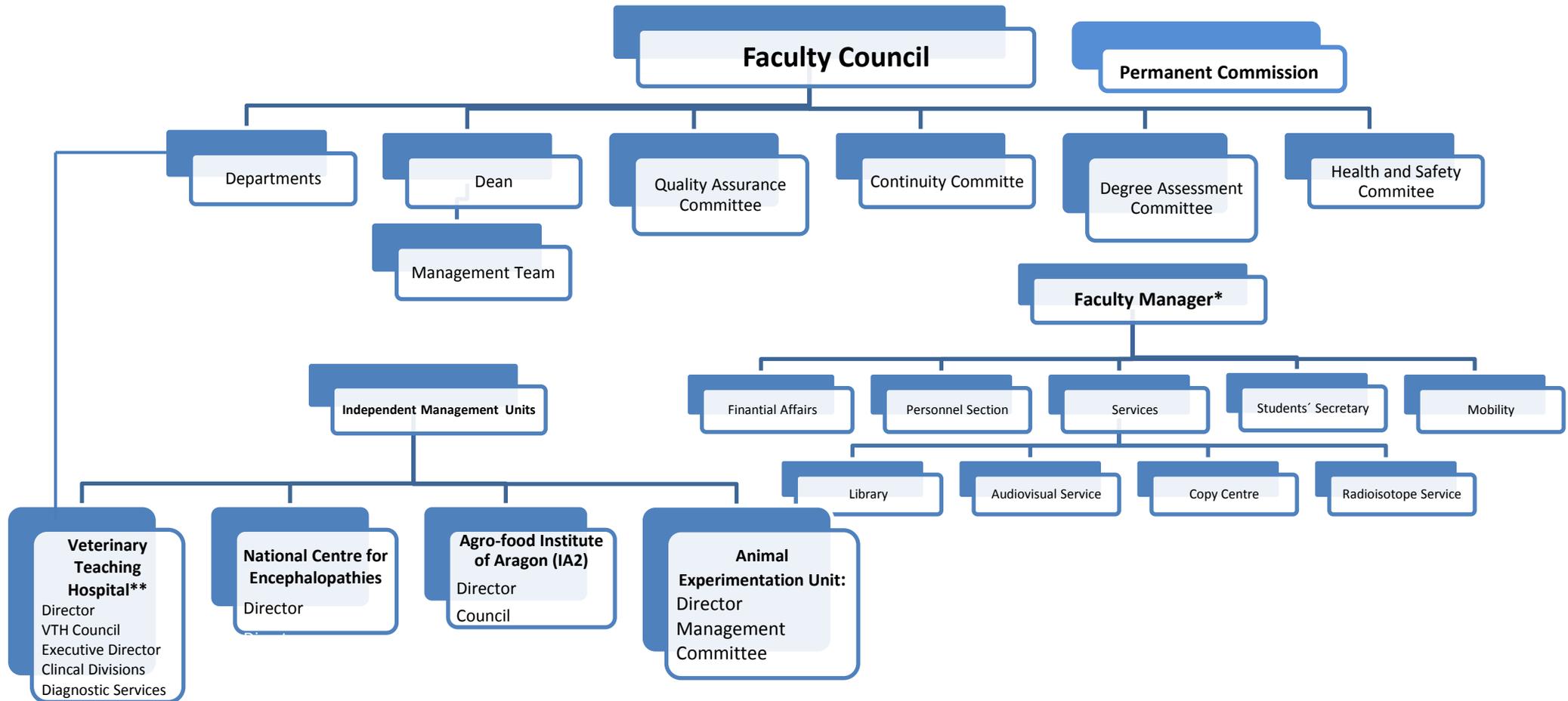
Opportunities
<ul style="list-style-type: none"> • The great importance of the agri-food sector in the region increasing the chance for agreements with our School and the professional outcomes for our graduates. • Better perception of food safety and food security issues by society. • Life and Health Sciences are the most dynamic areas to research at global level. Opportunity to organize a Master in Global Health at the School that contributes to the specialization of our graduates. • Development of partnerships to promote teaching and research internationalization through agreements with other universities, so that our students can obtain a double degree. • Improvement of the teaching and scientific performance through national and international competitive programs and projects. • Participation in international networks with access to knowledge generated in the world wide 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. • Improvement of educational programs and their adaptation to regional, national and European regulations. • The two Official Master´s Degree: Nutrition Animal and Food Quality, Safety and Technology are considered Reference Master of the University of Zaragoza. • One Health is a topic seen throughout several subjects. The FVZ will coordinate a Global Health Master, launching in 2020-2021, that will be a part of an international Master proposal.
Threats
<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> a) High cost of Veterinary Science training, generally acknowledged as the most expensive of all university education. b) Difficulty in creating new contracts to achieve the ideal number of teachers and support staff, both in absolute terms and from a future renewal perspective • Lack of sensibility of the Local Government for the geographical problems of our School. • Decrease of student's interest in food animals. • Social change in food habits. There is a gradually increase of vegan and vegetarian consumers, and a refusal to meat consumption and animal sacrifice.



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

Action	Timeframe	Indicators
1. Academic and organizational actions.		
Draw up teaching guidelines for practice sessions.		Conclusion
Avoid overlapping theoretical and practical activities.	2019-2020	
Obtain a technician for transport and coordination of teaching farms.		Conclusion
Revise biosecurity regulation in labs and animals practise sessions .		Conclusion
Organization of students transportation to extra-mural practice sessions.		Conclusion
Improve the academic staff assessment surveys and increase students participation.	Continuous	
2. Improvement actions on teaching and research facilities.		
Start-up the transport for cadavers and clinical cases.		Conclusion
Improve the biosecurity in the Necropsy Room.		Conclusion
Renovation of horses paddocks.		Conclusion
New isolation boxes for large animals.		Conclusion
Construction of infectious small animals hospitalization.		Conclusion
3. Teaching and support staff.		
Renovation of academic staff.	Continuous	
Renovation of support staff.	Continuous	
Staff assessment.	Continuous	
Enhance academic staff stability.	Continuous	
Reduce replacing permanent academic staff with part time associated teachers.	2019-2020	
4. Improve teaching, research and community services.		
Reduce the negative impact of financial crisis.	Continuous	
Expand and modernize VTH services for small and large animals.	Continuous	
Organization of Diagnostic Services.	Continuous	
Increase VTH revenues.	Continuous	
Expand research funds.	Continuous	
Increase training actions and revenues.	Continuous	
Improve Public Funding.	Continuous	
5. Others.		
improve Image and visibility.	Continuous	
Increase and improve the use of IT for teaching and research purposes.	Continuous	
Renovation of the webpage.	Continuous	
Increase lifelong learning training courses.	Continuous	
Increase Postgraduate studies.	Continuous	
Increase programmes/units of study offered in collaboration with other schools.	Continuous	
Enhance relationships with private clinics for small and large animals.	Continuous	
Increase the number of agreements with farms, companies and private clinicians.	Continuous	

1.1.4. Organizational chart of the Establishment



*He directly reports to the Unizar Manager, as member of the Faculty Council has the right to speak but not to vote and he annually presents the management report to the Faculty Council.

** The VTH is partially self-funded through its clinic activity income, likewise management decisions are taken by its VTH Council. However, Administrative affairs are taken care by the Faculty Manager.

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

Faculty Council: The Faculty Council is the collegiate governing body that elects and revokes the Dean, approves the creation or elimination of degrees and courses, approves the strategic decision and establish the basic criteria for the organization and coordination of its teaching activities. It includes the Management Team and 60 members, as follows: 39 representatives of teachers and researchers, 18 representatives of students and 3 representatives of the support staff.

Dean: The Dean is an uninominal executive organ, of external and internal representation of the FVZ. He is elected by the Faculty Council among all FMZ's full professors.

Permanent Committee of the Faculty Council : Its function is to deal with day-to-day matters in the name of the Faculty Council. It comprises 7 members: the Dean, who chairs the commission, 3 representatives of teachers and researchers; 2 representatives of students and 1 representative of the support staff.

Quality Assurance Committee: It assures and monitors the quality of the degree, coordinates the assessment of the teaching activity and studies, approves the Teaching Guidelines and provides a channel for the student's complains. It is composed of 9 members: 5 representatives of teachers, 2 representatives of students and 1 representative of the support staff and is chaired by the Dean or a delegated full time teacher.

Management Team: It will assist the Dean to accomplish his/her duties . It is chaired by the Dean and includes no more than 5 Vice-Deans and the Faculty Secretary.

Continuity Committee: It is the body responsible for resolving student's complaints regarding enrolment, continuity and re-admission issues. It comprises the Dean or delegated person who chairs it, 1 representative of teachers, 1 representative of students and the Faculty Manager who acts as Secretary.

The Degree Assessment Committee: It carries out an annual degree assessment to put forward improvement proposals to the Quality Assurance Committee. It includes eight members: two full time teachers, three students, an active external professional veterinarian, an external quality expert and the coordinator as the chairman (see 11.1.1).

Delegated Health and Safety Committee: It draws up and evaluates health risk prevention and working condition programs. It is composed by the Dean, the Faculty Manager and 2 representatives of teachers and support staff.

Library Committee: It manages the Library resources. Its duties also include recommendations for the acquisition of books, journals and different scientific, technical and teaching media.

Audio-visual Committee: It evaluates audio-visual needs and draws up its improvement plan.

Departments

There are four Departments that belongs and are allocated in the FVZ , namely regarding :

- Anatomy, embryology and genetics
- Animal Pathology
- Animal production and food science
- Department of Agricultural Sciences and the Natural Environment

There are other ten Departments , which are not allocated at the FVZ but they are responsible for the teaching of some subjects included in the FVZ syllabus. These departments are:

- Department of Pathological Anatomy, Legal and Forensic Medicine and Toxicology
- Department of Biochemistry and Molecular and Cellular Biology
- Department of Pharmacology and Physiology
- Department of English and German studies
- Department of applied Physic
- Department of Design and Manufacturing Engineering
- Department of Chemical Engineering and Environmental Technology
- Department of Applied Mathematics
- Department of Microbiology, Preventive Medicine and Public Health
- Department of Analytical Chemistry

Each department has its Department Council, which includes all full time teachers, representatives of researchers, temporary teachers and students. Departments are operative units with autonomy to run the budget approved by the Unizar Government Council, to coordinate the teaching activity of its professors and to propose initiatives of the

teaching staff to the Faculty Council. In addition each FVZ Department has one Economic and Teaching Committee and two Contracting Committees.

Units

Besides departments, there are other independent operating units: the **Animal Experimentation Unit** (SEA), the **National Centre for Encephalopathies** and the **Veterinary Teaching Hospital** (VTH).

The VTH has a Director that is elected by the VTH Council and whose composition comprises teachers involved on clinics and representatives of residents, undergraduate students and technical staff. The VTH is economically autonomous as it applies its own services fares (approved by the Unizar Government Council), so, if necessary, technicians can be hired and equipment can be replaced. Information about its services, staff and equipment can be found in chapters 5 and 9.

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

The strategic plan of the FVZ is proposed by the Dean and presented to staff, students and stakeholders in Faculty Council annually. The Dean and Vice-Deans are responsible for its implementation, assessment and ensure its compliance, and it is communicated to staff, students and stakeholders on the website. To elaborate the strategic plan is essential to know and analyse the **Quality Assessment and Learning Outcomes Report** and the **Annual Innovation and Improvement Plan** (See 11.1.2.)

The organization of the FVZ is largely established by national and regional legislation. The above described bodies: Faculty Council, Dean and Management Team, their composition, functions and responsibilities are legally defined in the University Organic Law (LOU). The statutes of Unizar also determine those bodies and all other committees, departments and units, describing their functions in further detail.

1.2. Comments

The General structure of the University of Zaragoza related to teaching aspects comprises:

The Knowledge Area is what gives the Department not only the meaning for its constitution, but it also has specific competences:

- Assignment of teaching to the academic staff.
- Propose the hiring of new staff to the Department Council for its approval..

The Departments are the bodies in charge of the coordination of the teaching of one or more knowledge areas in accordance with the teaching programme of the University, as well as of the support for teaching and research activities, and initiatives of the teaching staff. The different Departments are made up of areas of scientific or technical knowledge.

1.3. Suggestions of improvement

The Veterinary Faculty will enhance most of the pending aspects if different management aspects evolve in the future, namely regarding:

- Stabilize academic staff to full time employees.
- Promote Establishment's economic independence and autonomy.
- Negotiate further with the Rectorate and the Government of Aragon about the need of setting teaching farms outside the urban area.
- Improve the economic dotation to the veterinary Faculty
- Ability, when requesting funds to Financial Resources for research projects, to do it as Faculty rather than as University so that the Establishment can recover the overheads.
- Promote large animals specialized training courses.
- Settle agreements with official bodies related to horse riding such as the Horse Riding Federations of the border communities, companies related to the equine world such as Horse Insurers, Feed Manufacturers, etc.
- Explore sponsorships with companies related to the equine and veterinary industry in general to sponsor different activities



2.

Finances

2. FINANCES

2.1. Factual information

2.1.1. Description of the global financial process of the Establishment

The University Organic Law 6/2001 and 4/2007 (LOMLOU) defines the economic and financial system framework of the Spanish Public Universities, and lays down the distribution of the sufficient resources for the performance of its duties.

The University System Ordinance Law in Aragon (LOSUA), 5/2005 states the different ways of financing the resources coming from the Government of Aragon, namely regarding:

- Basic financing.
- Financing conditioned to the achievement of goals.
- Financing for Infrastructure investment.
- Financing for research.
- Financing to improve university-society relationship.

"The 2016-2020 Global Model for financing the University of Zaragoza", approved by the Government of Aragon and the UZ, states the criteria to determine the Basic financing, calculated on the total expenses of 2013 fiscal year, taken as reference:

- Official Degrees and Masters: 85%
- PhD and non-official Masters: 60%
- Research management: 85%

Therefore, the amount assigned to the minimum basic financing for the 2016-2020 period is:

2016	2017	2018	2019	2020
149.884.767	145.565.563	156.627.200	158.688.837	160.750.474

Based on this financing system, the University of Zaragoza lays down the following:

	2016	2017	2018	Mean %
Government of Aragon	170.384.912	175.313.115	179.430.096	66,1
Government of Spain	10.347.900	13.409.564	11.588.406	4,4
European Union	1.244.700	2.128.023	2.353.450	0,7
Financial institutions	1.586.351	1.613.775	1.696.325	0,6
Companies and associations	11.621.370	13.623.520	13.892.834	4,9
Own income	61.640.679	61.073.713	61.429.549	23,2
Total	256.825.912	267.161.710	270.390.660	

From the afore mentioned budget, a variable percentage (around a 4%) is distributed to the Teaching Programme and a part of it is allocated to Centres and Departments as decentralized management budget:

	Teaching Programme		Allocated to Centres		Allocated to Departments		Allocated to VTH	
		%		%		%		%
2016	9.490.018	3,7	8.53.479	9,0	1.910.354	20,1	523.453	5,5
2017	10.243.926	3,8	879.083	8,6	1.967.665	19,2	523.453	5,1
2018	10.873.906	4,0	879.083	8,1	1.967.665	18,1	523.453	4,8

The budget allocation to each centre and department depends on the teaching activity and functioning, bibliographic needs, incentives conditioned to teaching results and other activities, as well as on EPT planning. The criteria used for the allocation can be checked in Appendix 1.

The budget of the UZ is annual, per calendar year (from January 1st to December 31st) and not per academic year (from October 1st to September 30th). Therefore, the range of years shown in the tables goes from 2016-2018, as 2019 data has not still being retrieved.

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

The main expenditures are directly managed from the Rectorate and Central Services, so the FVZ only has financial autonomy to manage the decentralised expenditures, whose budget allocation is done globally and each unit decides about the internal distribution depending on its needs.

This decentralised management for general functioning expenditures includes the following concepts:

- Repairs, maintenance and upkeep of equipment and machinery
- Maintenance and conservation of furniture
- Maintenance and conservation of seconded didactic and scientific equipment
- Other repair, maintenance and conservation of common areas
- Photocopies
- Computer perishable stuff
- Office supplies
- Non-inventory teaching material in classrooms (chalk, erasers, etc.)
- Examination paper
- Forms, cards and others
- Writing paper, files, envelopes, folios, etc.
- Telephone expenses of the Centre
- Transport and courier costs
- Cleaning products, tools
- Cultural activities and student representation
- Organized institutional trips
- External internship trips
- Representation and running costs of the Centre
- Daily subsistence allowance and locomotion for movements related to the Centre
- Bibliographic collections intended for the Centre Library, (excluding journals)

Costs directly paid by the Central Services of UZ are: general infrastructure maintenance, energy consumption, investments and big constructions, university common services support, staff expenses, as well as journal subscriptions.

Likewise, the only revenue that can be considered as the Centre’s own (“finalist income”) are the renting of facilities (classrooms and others) and donations/subsidy. The remainder revenue are considered "generic income" (enrolment, certifications...etc.) and is managed by the UZ Central Services.

On the other hand, the VTH is a self-funded unit, thus all its income is considered "finalist income".

Then, the amounts that the FVZ received in the last three years were:

		Finalist	Income	Allocation	Generic	Income	
		Renting of facilities	Donations		Enrolment price	Service concession	Budget
2016	FVZ	5.000	900	54.415	1.359.482	40.406	60.315
	VTH	515.000	8.453				523.453
2017	FVZ	5.500	600	55.272	1.241.508	40.344	61.372
	VTH	515.000	8.453				523.453
2018	FVZ	13.415	600	54.471	1.059.711	11.583	68.486
	VTH	515.000	8.453				523.453

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

The overhead on revenues from research activities and own studies shall be entered as “generic funds” in the UZ budget.

Depending on the activity type, the applied percentages are:

- Research Projects: 21%
- Projects/Aids from the Government of Aragon 10%
- Diagnostic/External Services 15%
- Institutional and company cathedra 15%
- Permanent Education courses 15%

However, if the project is financed by whether the European Union or private companies, the percentage may differ depending on what the call bases lay down.

2.1.4. Annual tuition fee for national and international students

The Spanish model of University funding is decentralized by the Autonomous Communities. Therefore, the Government of Aragon sets the annual tuition fee for each academic course depending on the experimental grading and the times the student has been previously enrolled in a subject. The public prices of the last 3 years are:

Course	1 st enrolment	2nd enrolment	3rd enrolment	4 th enrolment or more
2016-2017	25,83	38,33	83,04	114,97
2017-2018	23,39	37,45	81,13	112,34
2018-2019	23,39	37,45	81,13	112,34

As a result, the annual tuition fee for a student in 2018/2019, who passed all the subjects the first time, was: 60 ECTS x 23,39 €/ECTS= **1,403,40 €**

These public prices applied to all students, however, non-EU students who do not have the status of residents, the annual tuition fee to pay is up to three times more (70,17¹€ per ECTS).

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

As explained in 2.1.2, expenses resulting from general infrastructure maintenance, energy consumption, investments and big constructions, university common services support, staff expenses, as well as journal subscriptions are directly paid by the Central Services of UZ.

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

The budget of the University of Zaragoza has to be compliance with the budget stability objectives and financial sustainability according to the streamlining and economic management Plan², which constrains the possibilities to carry out planned major investments for developing, improving and/or refurbishing facilities and equipment. Therefore, these needs are attended and prioritised by the Rectorate since the FVZ has no specific budget allocation to accomplish such great investments. As mentioned in 2.1.2 the FVZ only has financial autonomy to manage the decentralised expenditures.

¹ Without prejudice of the reciprocity principle and international agreements signed by the UZ to capture international students, in which case the increase may be up to twice (46,78€).

² http://www.unizar.es/sites/default/files/gobierno/vr_economia/plan_de_racionalizacion2017.pdf

The following table shows the on-going and planned major investments (FVZ and VTH) and the financing source:

FVZ	Financing source
Furniture renew and electric installation for the Library	FVZ funds
Improvement of the soil and fencing of the equine field	UZ funds
Renovation of audio-visual equipment in classrooms	FVZ funds
Expansion of the exhibition space of the Museum of Anatomy	UZ funds
Installation of automatic doors at the Aulario building	UZ funds
Remodelling of the Necropsies Room	UZ funds
Cleaning and disinfection point for animal transport vehicles	UZ funds
Adaptation of vehicle for transporting corpses and clinical cases	FVZ funds
Improvements in the adaptation of animal experimentation spaces to adapt to new regulations.	UZ funds
Renewal of audio-visual equipment in computer rooms	FVZ funds
VTH	Financing source
Refurbishment of small animal isolation areas	FVZ funds
New clinical room for possible infectious cases	FVZ funds
Adaptation of two rooms as delivery rooms	FVZ funds
Opening of the riding arena for the handling of horses	FVZ funds
New endoscopic surgical optics	VTH funds
Rebound tonometer	VTH funds
Digital radiology equipment	VTH funds

The amount of the above mentioned investments, that will affect two financial years, will sum up over 250,000 €.

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

It is difficult to estimate the expenditures and revenues for the next years. However, the amount assigned by the Government of Aragon (see 2.1.1.) secures a minimum of sufficient funds until 2020.

Since the basic financing provided by the Government of Aragon is a fundamental part of the budget and the forecast points a slow economic recovery, we expect a moderate increase of the incomes to be agreed upon with the Government of Aragon for the next 2021-2024 period.

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

Due to the allocated budget to the FVZ is managed in a decentralised way, it has to be used for the everyday functioning expenditures, which means that degree of autonomy of the FVZ about the expenditure, invest or income decisions is very low.

The Management Team of the FVZ (see 1.1.5.) is in charge of the distribution of the budget regarding the action plan of each fiscal year, and adding, if possible, the joint needs of the Departments.

Any expenditure that exceeds both the decentralised budget and major investments for developing, improving and/or refurbishing facilities and equipment must be requested extraordinarily to the appropriate Vice-rectorate and, in case of its approval, to be included in budget of the UZ.

The VTH Council, composed by the Head of the VTH, the governing board, permanent professors and representatives of temporary professors, support staff and students; this council decides how the budget is distributed.

The Management Team submits the FVZ budget for its approval to the Faculty Council, which also reviews the VTH budget (previously approved by the VTH Council). Accountability is provided by both the Faculty council and the VTH Council to the university community and stakeholders.

Information related to the data shown in the following tables:

The University of Zaragoza has an analytical accounting system guaranteed by the overseeing bodies of the Autonomous Community of Aragon, by which the cost of the degree can be determined.

The breakdown of the expenditures are:

1. Personnel:

- Academic staff:

- Teaching
 - Researching
 - Remunerated management (included in the payslip)
 - Induced management (not included in the payslip. Teaching innovation and project management)
 - Support staff
2. General and functioning expenditures:
- Direct
 - Small repairs, maintenance and upkeep
 - Fungible material
 - Phone and post communications
 - Bibliographic funds
 - Indemnification for services
 - Redemption of movable assets
 - Indirect:
 - Vigilance
 - Maintenance, cleaning, electricity, fuel and water
 - Redemption of real estate
 - Use of university infrastructure

The Teaching costs of the Veterinary degree include:

1. Teaching, remunerated and induced management for teaching activity (personnel and general costs) of the Departments.
2. Personnel and general costs attributable to the Faculty, in the proportion corresponding to the number of students enrolled in the Veterinary Degree in relation to the total number of students enrolled in the Centre.
3. Organisational activities costs
4. Costs allocated to centralised service support centres, costs allocated to university extension centres and costs of Reprography and Social Management services and examining boards.
5. Generic or unfunded research costs (proportional personnel and general and functioning costs) of the involved Departments.

Table 2.1.1 Annual expenditures during the last 3 academic years

		2018	2017	2016	MEAN
A	TEACHING	8.508.482,44	8.332.500,31	8.265.378,28	8.368.787,01
A.1	FVZ	1.279.329,69	1.233.759,48	1.251.916,02	1.255.001,73
A.1.1	Academic Staff	69.334,13	66.868,49	61.612,59	65.938,40
A.1.2	Support staff	528.805,14	538.064,60	539.911,86	535.593,87
A.1.3	General Expenses	681.190,42	628.826,39	650.391,57	653.469,46
A.2	DEPARTMENTS	4.772.679,60	4.641.074,96	4.610.747,81	4.674.834,12
A.2.1	Academic Staff	3.891.546,56	3.781.133,84	3.747.151,55	3.806.610,65
A.2.2	Support staff	702.796,69	697.685,30	693.760,89	698.080,96
A.2.3	General Expenses	178.336,34	162.255,82	169.835,37	170.142,51
A.3	VTH	1.132.371,18	1.151.169,32	1.136.254,99	1.139.931,49
A.3.1	Academic Staff	46.043,04	48.646,68	45.641,78	46.777,17
A.3.2	Support staff	400.776,72	414.362,72	409.544,48	408.227,97
A.3.3	General Expenses	685.551,41	688.159,91	681.067,73	684.926,35
A.4	GENERAL ACTIVITIES	1.324.101,99	1.306.496,57	1.266.460,46	1.299.019,67
A.4.1	Academic Staff	57.359,15	57.950,58	58.145,13	57.818,29
A.4.2	Support staff	733.763,94	709.945,50	714.144,84	719.284,76
A.4.3	General Expenses	532.978,90	538.600,48	494.170,49	521.916,62
B	INDUCED MANAGEMENT	88.417,54	77.899,68	101.221,70	89.179,64
B.1	DEPARTMENTS	88.417,54	77.899,68	101.221,70	89.179,64
B.1.1	Academic staff	84.417,54	77.899,68	101.221,70	89.179,64
C	RESEARCH	2.178.100,00	2.166.400,00	2.049.600,00	2.131.366,67
C.1	DEPARTMENTS	2.178.100,00	2.166.400,00	2.049.600,00	2.131.366,67
C.1.1	Academic staff	2.156.166,10	2.141.382,90	2.024.969,40	2.107.506,13
C.1.2	General Expenses	21.933,90	25.017,10	24.630,60	23.860,53
	TOTAL	10.774.999,98	10.576.799,99	10.416.199,98	10.589.333,32

The VTH costs are:

	2018	2017	2016	MEAN
Personnel	619.568	637.795	637.038	631.467
Academic staff	18.365	20.008	22.166	20.180
Support staff	551.433	564.117	566.592	560.714
Courses, conferences, extraordinary services	49.770	53.671	48.280	50.574
Direct Costs	433.324	425.195	409.676	422.732
Indirect Cost	517.273	522.745	543.485	527.834
TOTAL	1.570.165	1.585.735	1.590.199	1.582.033

Table 2.1.2 annual revenues during the last 3 academic years

Revenue source	2018	2017	2016	Mean
Tuition fee	1.148.105,66	1.214.768,72	1.265.404,09	1.209.426,16
Administration fee	25.118,45	25.415,40	22.927,74	24.487,20
FVZ Services	3.728,75	2.861,52	5.945,71	4.178,66
VTH Services	591.652	615.473	543.850	583.658,33
TOTAL REVENUE	1.570.165	1.585.735	1.590.199	1.582.033

Expenses are managed by the Rectorate, therefore, the table above shows the income generated by means of providing different services (tuition fee and administration fee) and unexpected services for the calculation of the budget allocation to the FVZ. In relation to the VTH, the table shows all income generated.

Income generated by means of providing academic services (tuition fee and administration fee) are not allocated to the FVZ, since they are managed by the Rectorate.

Table 2.1.3 Annual balance between expenditures and revenues

Due to the fact that it is very complicated to determine the revenue and expenditures which correspond to the Veterinary Degree, the tables down below show the costs outcomes of the FVZ in comparison with the overall figures of the University of Zaragoza.

Teaching and unfunded research costs

		Teaching	Unfunded Research	Total cost
FVZ	2018	8.596.900,00	2.178.100,00	10.775.000,00
	2017	8.410.400,00	2.166.400,00	10.576.800,00
	2016	8.366.600,00	2.049.600,00	10.416.200,00
	Mean	8.457.966,67	2.131.366,67	10.589.333,33

		Teaching	Unfunded Research	Total cost
UZ	2018	149.927.900,00	33.136.500,00	183.064.400,00
	2017	147.502.700,00	32.124.900,00	179.177.600,00
	2016	144.177.200,00	31.983.300,00	176.160.500,00
	Mean	147.202.600,00	32.414.900,00	179.467.500,00

Teaching costs per student

		Nº of students	Teaching cost per student	Total cost per student
FVZ	2018	807	10.652,90	13.351,80
	2017	800	10.513,00	13.220,90
	2016	816	10.253,00	12.765,00
	Mean	808	10.472,97	13.112,57

		N° of students	Teaching cost per student	Total cost per student
UZ	2018	24.881	5.942,67	7.128,27
	2017	25.176	5.907,30	7.063,17
	2016	25.223	5.856,33	7.003,67
Mean		25.093	5.902,10	7.065,04

Coverage range

		Income	Teaching cost coverage	Total cost coverage
FVZ	2018	1.173.224,10	13,6 %	10,9 %
	2017	1.240.184,10	14,7 %	11,7 %
	2016	1.288.331,80	10.253,00	12.765,00
Mean		1.233.913,33	14,6 %	11,7 %

		Income	Teaching cost coverage	Total cost coverage
UZ	2018	27.621.270,30	18,9 %	15,8 %
	2017	28.714.032,00	19,5 %	16,3 %
	2016	28.867.451,94	19,8 %	16,5 %
Mean		28.400.918,08	19,4 %	16,2 %

VTH coverage range:

	2018	2017	2016	MEAN	Coverage
Personnel costs	619.568	637.795	637.038	631.467	39,9 %
Direct costs	433.324	425.195	409.676	422.732	26,7 %
Indirect costs	517.273	522.745	543.485	527.834	33,4 %
TOTAL	1.570.165	1.585.736	1.590.199	1.582.033	
Income	591.652	615.473	543.850	583.658	
Coverage range	37,7 %	38,8 %	34,2 %	36,9 %	36,9 %

2.2. Comments

Normal expenditures are covered in any case. However, restrictions resulting from financial stability together with the scarce financial allocation to face unexpected needs make difficult carry out improvement projects and, above all, if they are long-term investments, namely regarding:

- Decrease in salary and freeze of career progress for civil servants.
- It becomes very challenging to maintain the teaching and research equipment, which impacts the acquisition of inventory material.
- Difficulty in maintaining the number of animals needed for practice sessions considering that all animal species should be covered.

On the other hand, new approved regulation on public contracting slows down the agility of the budget management, which, together with the budget decentralisation established just to face the basic functioning, left the FVZ with few degree of autonomy for expenditure.

Finally, the FVZ is adequately financed to cover its day-to-day activity, but there are some deficiencies that affect the proper teaching and research functioning. Education in veterinary is by far one of the most expensive worldwide, thus the Dean is continuously making a great effort to explain to Rectorate and the local government the need for increasing funding for veterinary education.

2.3. Suggestions of improvement

- Reduce the current percentage withheld by the University, especially in the case of research projects and Diagnostic/External Services.
- A new model for budget distribution among the Centres of the UZ is needed, since the Veterinary Degree is negatively impacted by the current one.
- Expand services provided to the community.
- Intensify efforts to attract sponsors
- Improve facilities' profitability
- Improve and spread the image/brand of the institution.
- The new approved regulation on public contracting should be revised, since it makes financial management very slow.





3.

Curriculum

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 outcomes

The Degree in Veterinary Science provides the precise knowledge for the veterinary professional in its different profiles.

Specific achievements are based on the Directive 2005/36/EC on the recognition of professional qualifications amended by Directive 2013/55/EU of the European parliament and the council of the 20th of November 2013.

Veterinary training will ensure that the professional has acquired the following knowledge and skills:

1. Adequate knowledge of the sciences on which the veterinary surgeon activities are based and of the Union law related to those activities.
2. Adequate knowledge of the structure, functions, behaviour and physiological needs of animals, as well as the skills and competences needed for their husbandry, feeding, welfare, reproduction and hygiene in general.
3. Clinical, epidemiological and analytical skills and competences required for prevention, diagnosis and treatment of the diseases of animals, including anaesthesia, aseptic surgery and painless death, whether considered individually or in groups, including specific knowledge of the diseases which may be transmitted to humans.
4. Adequate knowledge, skills and competences for preventive medicine, including competences relating to inquiries and certification.
5. Adequate knowledge of hygiene and technology involved in the production, manufacture and putting into circulation of animal feedstuffs or foodstuffs of animal origin intended for human consumption, including skills and competences required to understand and explain good practice in this regard.
6. Knowledge, skills and competences required for a responsible and sensible use of veterinary medicinal products that aims to treat animals, to ensure a safe food chain and the protection of the environment.

To achieve those generic competences, the student must acquire the following knowledge:

- Veterinary basic sciences (95 ECTS). Based on the study of: Anatomy (including histology and embryology); Physiology; Biochemistry; Genetics; Pharmacology; Pharmacy; Toxicology; Microbiology; Immunology; Epidemiology; Professional ethics.
- Clinical and sanitary skills (105,5 ECTS). Based on the study of: Obstetrics; Pathology (including pathological anatomy); Parasitology; Clinical medicine and surgery (including anaesthetics); Clinical lectures on various domestic animals, poultry and other animal species; Preventive medicine; Radiology; Reproduction and reproductive disorders; Veterinary state medicine and public health; Veterinary legislation and forensic medicine; Therapeutics; Propaedeutics
- Animal Production (33,5 ECTS) Based on the study of: Animal nutrition; Agronomy; Rural economics; Animal husbandry; Veterinary hygiene; Animal ethology and protection.
- Food technology, hygiene and safety (22 ECTS). Based on the study of: Inspection and control of animal foodstuffs or foodstuffs of animal origin; Food hygiene and technology; — Practical work (including practical work in places where slaughtering and processing of foodstuffs takes place)
- Supervised internship and Final Degree Dissertation (30 ECTS)
- Optionally subjects and others (14 ECTS)

The syllabus designed for the degree in Veterinary Science in the University of Zaragoza is according to the national and European regulations and, it has been reassessed and verified by the ANECA.

With the aim of being concise but transparent at the same time, the annual coordination of the syllabus works as follows:

In relation to the Programme learning outcomes:

- At the end of the teaching period, the Director of the Department ask to the Department Council's members if there is any change in the responsibility of the subject coordinators.
- Then, the Coordinator of the Degree ask to the coordinators of the different subjects if there is any modification or update regarding the learning outcomes of the programme to be done and informs them about the deadline to do so.

- The Subject Coordinators, in cooperation with the teachers of the subject, design the programme of the learning outcomes and the Coordinator of the degree is informed in case of any syllabus change.
- After considering and revising the proposed changes, the Coordinator of the degree elevates them to the Quality Assurance Commission to be approved or rejected.
- All teaching guidelines should be published at the beginning of July.
- The whole process can be checked on the Q316 procedure: Teaching planning and preparation of the teaching guidelines.

In relation to how the degree is planned (timetables, distribution of theoretical and practical subjects, etc.) there is a regulation from the Centre that can be checked in the following web page: <https://veterinaria.unizar.es/academico/normativa-programacion-academica> and it can be summarized as follows:

Timetables for lectures of the core subjects are drawn up by the Dean's team and the Faculty Departments: three or four sessions from Monday to Friday of 50 minutes each. Timetables for lectures of the elective subjects and practice sessions will be coordinated and adapted in relation to core subjects schedule.

All planned teaching activities: theoretical classes, practices, seminars, oral presentations, work defences, conferences, etc. must be programmed through the application of teaching management of the Centre, so a calling of any activity not uploaded in the mentioned application is not permitted.

For each academic year, the Deanship set up timetables for the degrees of the Centre, always based on those set up in the previous year. These schedules may include modifications proposed by the Deanery itself or by the Departments that will have to communicate to the Coordinator of the degree during the first week of July. These changes are approved by the Quality Assurance Committee of the degree and will be publicly available in July, so students can check them before the beginning of the enrolment period, as the article 158.c of the Statutes of the University of Zaragoza lays down.

Once timetables have been published in the teaching management application of the Centre, readjustments will not be accepted, unless they are properly justified and do not cause any inconsistency within the general schedule. The proposals for change will be justifiably resolved by the Coordinator of the degree, to whom they must be requested directly, and a copy shall be sent to the corresponding Department Direction.

If the Dean office had to modify timetables after its publication and once the enrolment period is over due to causes of force majeure (illness, hiring new staff...etc.), the option to swop subject would be given to those students who might be affected by such modifications. Modifications will not be accepted, except for reasons of force majeure and properly justified, after the following dates:

- September 30 for the first semester
- January 31 for the second semester

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 Veterinary Degree at the University of Zaragoza is regulated by the **European Directive 2005/36**, transposed to Spanish regulations in the **Royal Decree 1837/2008** and the **Royal Decree 581/2017**, of June 9, by which is incorporated in the Spanish law the **Directive 2013/55** / EU of the European Parliament and of the Council, of November 20, 2013, which modifies Directive 2005 / 36 / EC on the recognition of professional qualifications.

The Degree is included in the Registry of Universities, Centres and Titles (RUCT) of the Ministry of Education, Vocational Training and Universities (Ministry of Education, Culture and Sport), and approved by ANECA in 2009, being just modified in 2015 for the accreditation to a MECES 3 level equivalent to a Master one.

The main curricular constraints of the veterinary degree are mainly due to the Regulatory framework:

The Veterinary Science Degree consists, according to the current legislation, of 300 ECTS distributed throughout 5 academic courses and structured in 5 modules, with defined competences, being the profession of veterinary a regulated one.

The basic training credits defined by **Royal Decree 1393/2007** add up to 61 ECTS (distributed in subjects of, at least, 6 ECTS) of which 49 ECTS correspond to the branch of Health Sciences subjects (which this Degree belongs to), 6 ECTS to the Science branch and other 6 ECTS to the Social and Legal Sciences branch.

It should be noted that, as the Article 12.5 of Royal Decree 1393/2007 lays down, these credits "Must be configured by basic subjects of the same or other branches of knowledge included in Annex II, or by other subjects, provided that whether their basic nature or its transversal character for the training of the student is justified". Therefore, Genetics

subject has been linked to Biology basic subject, since the former is part of the fundamental biology for the understanding of other Grade subjects. In addition, in the **RD 1837/2008** that regulates the veterinary profession, Genetics is included within the block of basic sciences, like Anatomy (including Histology and Embryology), Biochemistry and Physiology.

The current curriculum is structured in accordance with **Order ECI / 333/2008**, of February 13, that lays down the requirements for the verification of the official university degrees that qualify for the exercise of the veterinary profession, whose Annex describes five competency modules to acquire, with a minimum number of ECTS.

We have to point out that Unizar established some restrictions for the curriculum design in the Agreement of May 15, 2009 approved by the University Government Council that states the General Guidelines for the elaboration of the formative programmes. This fact is especially relevant in relation to the last module of elective subjects, since a subject of 2 transversal ECTS that certifies the attainment of a B-1 English language level or equivalent is compulsory. For this reason, our degree offers an elective subject (Scientific English for veterinarians) with B2 competences in English language that can validate this B1 requirement.

The article 10.1.a) lays down "a minimum of 18 ECTS and a maximum of 48 ECTS electives". The number of electives offered in a programme will be within the range of 2 to 2.5 times elective credits that the student must overcome to obtain the degree " This minimum has never being reached, although it is not a problem since the same article states that "in the case of qualifications with legally established professional competences, the number of optional credits may be lower". The number of elective ECTS credits in this degree that have to be passed are 12 out of an offer of 30 ECTS. The offer of elective courses initially proposed will be reviewed annually following the criteria established by the Quality Assurance Committee.

In addition, it must be taken into account that, according to article 46.2.i) of the University Organic Law 6/2001, of 21st of December, students will be able to obtain Academic Recognition in Credits by Participation in cultural activities, sports, student representation, solidarity and cooperation, up to a maximum of 6 ECTS.

The Establishment has autonomy to change de curriculum and the procedure to do so depends on the nature of the modification. Based on their nature, the modifications can be classified as follows:

I) Non-substantial modifications: those minor modifications that improve the degree and universities can implement them throughout their internal follow-up process (Annual Quality Reports and Learning Outcomes and Annual Plans for Innovation and Improvement, Annual Summary Report and Report of Self-evaluation for Accreditation).

II) Substantial modifications: all modifications to the structure, nature and objectives of the already verified degree are considered. In addition, these types of modifications can be classified as:

a) **Authorized:** they will be those that affect the structure of the title, but do not suppose a change in their nature and their objectives and, therefore, they are requested through the modification process.

b) **Non- Authorized:** they will be all those that affect the nature and objectives of the verified title and, therefore, they require the request of a new verification and, consequently, the extinction of the current one.

These non-automatic authorized changes are regulated by a specific procedure that can be seen in the following web page:

https://academico.Unizar.es/sites/academico.Unizar.es/files/archivos/ofiplan/procedimiento/proced_modificacion_18_19.pdf

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

Curricular overlaps, redundancies, omissions and lack of consistency, transversality and/or integration of the curriculum are continuously evaluated by the Quality Assessment Committee, which aims to assess the quality of the degree, which is summarized in the annual quality and learning outcomes report. The procedure to draw up this report can be checked on the Unizar website.

Throughout this Report, the Quality Assessment Committee states a diagnosis of the status of the degree regarding the quality of its teaching and organizational aspects and makes recommendations on the mentioned aspects that, on its opinion, should be reviewed. The report is carried out and made public in accordance with the requirements of the procedure for evaluating the quality of the degree.

To explain how they are identified and how we proceed to correct them is necessary to analyse the sources of information that we use. These sources are:

- Surveys of the subjects of the Veterinary Degree

- Success and Performance Rates
- Academic and support staff surveys
- Tutorial Plans
- Meetings of the Veterinary Degree Evaluation Commission
- Information provided by Student representatives to the Evaluation Commission
- Suggestions, complaints and allegations for the title improvement
- Meetings held with some of the academic staff and subject's coordinators
- Student mobility information
- Information on external practices
- ACPUA and ANECA reports
- Transparency portal of the University of Zaragoza
- Evaluation Report of the Veterinary Degree of previous years
- Faculty Board Minutes

The composition of the Quality Assessment Committee is designed to ease the analysis from different points of view of the groups involved in it. It is composed by the Coordinator of the degree as the chairman, three students chosen among the representatives of the various courses and groups, two members of the academic staff, an external professional or graduate proposed by the Quality Assurance Committee and an outer expert on questions of teaching quality, proposed and appointed by the Rector.

Reports from 2010 to 2018 are available in the web page of qualifications of the University of Zaragoza.

The curriculum is adjusted to avoid overlaps, redundancies and omissions, nevertheless if those circumstances were detected an improvement plan would be set up in order to solve them.

3.1.4. Description of the core clinical exercise/practical/seminars prior to the start of the clinical rotations

During the 1st year, students are trained for sampling to perform histological techniques and main characteristics of this procedure. This training is included in **Cytology and Histology** subject. In addition, in **Biology and Biochemistry** students are trained to obtain semen, hand stallions and assess seminal quality. Finally, during this year they are trained to restrain livestock species and companion animals in **Ethnology and Animal Welfare** subject: Small ruminants (1 hour); Horses (1 hour); Poultry (1 hour); dog training (2 hours); Poultry welfare (2 hours). Seminars are performed in Cytology and Histology (1 hour); Biology and Biochemistry (2 hours) and **Ethnology and Animal Welfare** (2 hours)

During the 2nd year, students are trained in **Physiology** discipline to analyse the intestinal absorption of sugars in an anesthetized rat as well as to perform vaginal smear in rats. Students also learn to collect and incubate biological samples to analyse the resulting microorganism's in **Microbiology and Immunology** as well as in **Parasitology**.

During the 3rd year, students are trained, in **General surgical pathology, surgery and anaesthesiology** discipline, on how to perform basic surgical techniques on cadavers or pieces of slaughterhouse. In summary, during 8 hours' students learn how to apply: Haemostasis techniques; Peritoneal management; opening and closure of a hollow viscera; the suture continues in the closure of hollow viscera; The suture continues to close the muscles; the suture continues at the subcutaneous closure; Skin suture review. In addition, during 13 hours' students perform: The Pre-operative assessment (Pre-anaesthesia); Induction and intubation; Maintenance, monitoring and complication; Analgesia plan. Basic and advanced monitoring. Main anaesthetic complications. General principles of loco-regional anaesthesia. Main blocks based on anatomical references.

In the **Anatomic General Pathology** subject, students develop and perform necropsy practices. The aim of the practical activity is to allow students to perform a necropsy in several animal species, take samples for the histopathological study and send them to the laboratory adequately, which means 10 hours of poultry, dog or cat, pig or rabbit and ruminant necropsies. Students are also trained on recognition of macroscopic lesions from slaughterhouse. On one hand, these practices aim to describe and identify general injury patterns in different organs and, on the other, to get to know the bases of the anatomopathological inspection of the organs confiscated in slaughter species slaughtered in the slaughterhouse

In the **Propaedeutic and General Pathology (I and II)** subject, students perform:

Dog exploration (3 h): Behaviour and management. Taking of constants, mucous membranes, lymphatic and Respiratory system. Examination of the abdomen in dogs (1'5 h). Exploration of the nervous and musculoskeletal system in dogs (2 h). Exploration of the senses in dogs (2 h). Exploration applied on dogs (2 h).

Equine exploration (3 h): Behaviour and management. Taking of constants, mucous membranes, lymphatic and Respiratory system. Examination of the abdomen and nervous system in equines (1.5 h). Exploration applied in equines (2 h).

Sheep exploration (3 h): Behaviour and management. Constant, lymphatic. Respiratory device

Exploration in cattle (3 h): Behaviour and management. Taking of constants, mucous membranes, lymphatic and Respiratory system.

Ruminants: Exploration of the digestive system in ruminants and ruminal fluid analysis (3 h). Mammary and genitourinary exploration in ruminants and taking biological samples (2 h). Exploration applied in ruminants (2 h).

Application of substances in domestic animals (3 h).

The skin: taking samples and basic diagnostic tests. (3 h)

Haematology (3 h): Sampling. Basic laboratory analysis.

Cardiac examination: electrocardiography and blood pressure. (3 h)

Clinical cases and practical cases: Anamnesis (1'5 h). Haematology (2 h).

Evaluation of body condition in dogs and cats and their influence on quality of life (1 h).

Management and exploration in pigs (1'5 h).

Sampling and basic analysis of urine (2 h).

Clinical cases and practical cases: Digestive biopathology (2 h).

Clinical cases and practical cases: Renal biopathology (2 h).

Clinical cases and practical cases: Endocrine biopathology (2 h)

Clinical cases and practical cases: Biopathology in large animals (2 h).

In **Reproduction and Obstetrics** students are trained in delivery care.

During the 4th year, students are trained in clinical exercises and as a novel way, the subjects of this year are studied like an integration course. So, we will explain how clinical expertise are acquired in each integrated discipline.

In **Ruminant integration course**, students learn the introduction to the clinic of ruminants (52) and are trained on: Clinical cases and podiatry; Reproduction applied in ruminants; Clinical cases and diagnosis of respiratory diseases; Clinical cases and diagnostic of the digestive system; Clinical cases and diagnosis of diseases of the udder; Exploration and diagnosis of pregnancy in ruminants; Necropsies in ruminants; Joint clinical sessions: development and discussion of a report; Diagnosis of infectious and parasitic diseases; Exhibition of the study-prospecting livestock. The subject ends with applied seminars about Health programs in small ruminants and cattle.

In **Poultry and rabbit integrated Course** students perform farm management practices (7h in poultry and 2.5h in rabbit farming). In addition, it is complemented with:

- laboratory practices of embryo diagnostics and egg quality control (4 h)
- clinical diagnostic practices (9 h in poultry and 2 h in rabbit breeding)
- reproductive technology practices (2 h in rabbit breeding)
- discussion of zoo-technical and nutritional cases (4 h in poultry and 1 in rabbits);
- discussion of clinical cases (2 h in poultry and 0.5 h in rabbit breeding);
- exposure by students of clinical cases in avian pathology (2 h);
- seminar about more frequent pathologies and its prophylaxis in current rabbit breeding (2 h).

In **Small Animal Integrated Course**, students perform 40 clinical hours in pet animal's consultations and hospital operating rooms. Briefly:

Internal Medicine Consultations (20 h); Surgical Pathology (12h) and Reproduction (8h)

In addition, 15 hours are performed in seminar rooms and laboratories:

Necropsies (5h); Seminar and Laboratory Infectious Diseases (5h); Seminar and Laboratory Parasitic Diseases (5h);

In the **Aquatic animals and exotic pets Integrated Course** students learn how to perform clinical examination and sampling of birds and reptiles (3 h); Resolution of problems and clinical cases (2 h) and Sexual differentiation: Dissection, fertilization techniques, sex change and triploidization.

In the **Equine Integrated Course** students develop Lameness test: inspection and static examination with practice horses (1.5 hours); dynamic examination with practice horses and / or clinical cases and / or lameness simulator (1.5 hours); Perineural anaesthesia and arthrocentesis of the distal end of the horse, dissection of the finger with slaughterhouse specimens in the surgery laboratory (3 hours); Genital exploration of the mare. Obtaining, titration and preparation dose of seminal doses (3.5 hours); Case-based learning session: "There is no way to make this mare pregnant ...! Danger: abortions! ... "(2 hours); Learning session based on cases: "My mare has just had a foal, but she is very weak, something happens to her ...! My colt has problems ...! "(2 hours); Problem-based learning session: "I just bought a horse: what do you eat? What was your habitat like? What documentation do you need? What do you do with deworming?" (2 hours); Necropsy technique in horses: visualization of the necropsy technique applied to the equine species, visualization and interpretation of the equine digestive, visualization of other internal organs (2 hours). Practice type L4 (6 groups) in necropsy room; Advanced clinical examination-pre-purchase exam (2 hours).

In **Porcine Integrated Course** students learn Technology of swine reproduction: Choice of breeders. Reproductive exploration of the nulliparous. Assessment of body condition. Heat detection Artificial insemination. Collection of semen. Reproductive exploration of pregnant sows and diagnosis of pregnancy. Preparation and delivery care. Swine necropsy room. Points of blood extraction and vaccination. Necropsies of clinical cases; Clinical case in feedlot and transition. Anamnesis of the case, samples to be selected for laboratory diagnosis, diagnosis and therapeutic and prophylactic measures to be adopted. (1 teacher: 2 h x 12 groups). Clinical case in breeders and transition. Anamnesis of the case, samples to be selected for laboratory diagnosis, diagnosis and therapeutic and prophylactic measures to be adopted. (1 teacher: 2 h x 12 groups).

In the 5th year, prior to Clinical Rotations, the subject Small Animal Internal Medicine includes seminars or solving clinical cases. Preventive Medicine, Animal Health Policy, Zoonoses and Public Health is taught using computer-assisted learning, and employing preventive and epidemiology programmes commonly used in Animal Health and Public Health.

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

Clinical Practice: Small, Exotic and Equine Animals

This course aims to enable students to apply, in a real professional context, the knowledge and skills acquired in previous courses with respect to the clinic of the species whose individual pathologies are attended by veterinarians: horses, dogs and cats and exotics.

The subject is developed in the context of the last year of the Degree, when the student has already received theoretical and practical clinical training and is ready to apply it in the clinic. It is the right time to provide, under appropriate supervision, a first clinical and practical experience.

Group size per teacher: Always between 5 or 6 student per teacher.

1. Dogs and cats. 77 h tutorials (face to face classes) and 15 h individual workload:

Clinical Care in medical consultation or surgery (77 hours): Practical sessions on general medical consultations, medical specialties and operating rooms of the VTH:.

- 9 hours in general medical consultation. (3 hours a day for 3 days).
- 36 hours in medical specialties:
 - Two full weeks, 3 or 4 hours/day by specialty:
 - Reproduction. 1 day, 4 hours
 - Dermatology. 1 day, 4 hours
 - Pet Ethology. 1 day, 4 hours
 - Neurology. 1 day, 4 hours
 - Cardiology. 1 day 1,5 hours
 - Endocrinology. 1 day 3 hours
 - Clinical Oncology. 1 day, 4 hours
 - Urology. 1 day 4 hours
 - Ophthalmology. 1 day 3 hours
 - Odontostomatology. 1 day 3 hours

- 32 hours in Operating Room: anaesthesia and surgery. 8 days on two weeks (4 days a week), 4 h daily. During these days, students will actively collaborate in anaesthetic and surgical procedures to the extent that the case and the knowledge and skills of the student permit.
- Cardiology Seminar
- Autonomous work and study (15 h): Dedicated to the preparation and conduct of examinations.

2. Exotic Animals. 7.5 face to face and 5 autonomous work and study hours

- Medical care or surgery (7 hours)
 - Practice sessions of 3.75 h each, one in VTH consultations and other outpatient clinics, with assistant professors. They will complete the weeks of dog / cat consultation.
 - Autonomous work and study (5 h): Dedicated to the preparation of the examination.

3. Emergency, UCI and Hospitalization: 13 hours with tutorship and voluntary activities

Emergency with tutorship:

- Five practical sessions (the first of 3 hours and the remaining four of 2.5 hours), held in the emergency department, ICU and hospitalization of the VTH. The clinical cases that go to it will be attended during the time of development of the practices and in the periods in which there are no cases to attend, the following activities will be carried out:
 - Introduction to emergencies
 - ABC (Airway, Breathing, Circulation)
 - Review of clinical cases admitted to the Intensive Care Unit (ICU)
 - ICU operation
 - Explanation of how patients are monitored and how their hospitalization sheet is carried out and interpreted
 - Review of fluid therapy protocols
 - Rehydration pattern
 - Dose calculation
 - How to supplement potassium
 - Laboratory operation
 - Interpretation of analytics
 - Screening
 - Ecofast
 - CPR drill
 - Empathy with the owner: Representation of clinical cases
 - Review of how to perform basic sutures using bio-models
 - Management of surgical instruments
 - Protocol of action in an emergency case that goes with traumatic injury
 - The following procedures will be performed on a cadaver:
 - Intubation
 - Esophageal tube placement
 - Thoracic drainage tube placement
 - Urine drainage tube placement
 - Placement of peritoneal drainage tube
 - Placement of nasogastric feeding tube
 - How to drain a chest (with clinical case introduction)
 - How to perform a puncture to decompress a twisted stomach
- Presentation, discussion and evaluation of students' memories.
- Summary of cases of the week. Debate and resolution of possible doubts that may remain pending.
- Self-evaluation sheet review. (See Appendix 2)

Emergency voluntary Activities

- Voluntary clinical assistance during VTH guard shifts tutored by VTH veterinary staff:

For a week:

- In the afternoon for a week (up to 7h)
 - Overnight for a week (up to 30h)
 - In the weekend (up to 16h)
 - Localizable emergencies for a week
- Assistance to VTH during non-school periods Activity in which the student signs up to collaborate in the emergency support of the HCV during non-school periods.

- Assistance to emergency clinics outside the University of Zaragoza. Activity in which the student attends up to 8h emergency during the weekend to a concerted external veterinary clinic specialized in Emergency care.

4. Necropsy sessions. 7'5 face to face hours and 5 individual workload:

Clinical sessions in the necropsy room with cases of canine / feline and equine from the VTH or referred by other veterinarian species.

They were scheduled with sessions necropsy of other species included in the Clinical Practice of Production Animals

5. Horses. 22.5 face to face and 15 autonomous work and study hours:

- Hospital clinical practices: in the area of Large Animal VTH.
 - 3.5 h with equine patients
 - 8.5 h with bio-models:
 - 1.5 h Trans-rectal examination training in equine cadaver preceded by a preparatory workshop 1 h.
 - 3.5 h nerve blocks and major surgical interventions in the head
 - 3.5 h surgical techniques limbs.
- Outpatient practices in equestrian centres or stud farms (7 h)
- Ambulatory clinical equine patients cared for on an outpatient basis with assistant professors with mobile clinics. (Divided into two sessions of 3.5 hours each).
- Seminars about main locomotor pathologies in equine patients (2 h).
- Seminars about issues of interest to students (1 h)
- Supervised visits to equestrian centres to analyse real problems and a previous seminar about identification and reproduction (1.5 h).

Clinical Practice: Production Animals

The Clinical Practice of Production Animals is taught in the fifth course of the Veterinary Degree throughout the ninth and tenth semesters. It includes the practical application in farm of Production, Clinic and Health subjects, and it is completed in the Faculty with the post-mortem study. It requires the training provided by the Integration subjects included in the 4th year and the basic and preparatory subjects included in the first three Veterinary degree courses.

The learning system is designed to enable students to acquire competencies, skills and abilities in production, clinical and health that are necessary for their future professional performance with food-producing animals for human consumption. In addition, they will be able to check the connection of veterinarians with the Faculty, since the Ruminants Clinic and Anatomopathological Diagnosis services will provide them with the necessary support within the framework of the Clinical Practice Production Animals in those cases considered necessary.

The methodology followed in this focus on achieving the learning goals.

Students are actively involved as they join veterinary professionals in their daily work on farms of various animal species. They work on both productive and health aspects. In case of detecting interesting clinical problems in any of these visits, affected animals will be included in the corresponding post-mortem practicum section.

The Practicum of poultry and rabbits presents special difficulties due to the strict biosafety and confidentiality conditions which the sector comes across with. For this reason, sometimes it is not possible to ensure a sufficient number of authorized visits to commercial farms. In the event of such a situation, the Faculty plans, as an exceptional case, to transfer part of these practices to its own facilities, ensuring that the associate professor and the postmortem diagnostic teachers will present to the students a sufficiently representative number of clinical and practical cases.

Group size per teacher: Always 5 or 6 student per teacher

- **Dairy cow:** 2 visits to the farm, 3.5 hours each.
- **Beef cattle:** 4 hours visits to various farms, and 2 seminars of 1.5 hours.
- **Sheep:** 2 farm visits, 3.5 hours each, and 1 1-hour seminar on health programs
- **Porcine:** 2 visits to different farms of 4 hours each, and 7 hours of seminars aimed at solving doubts, preparation of reports, resolution of clinical cases, and deepening in certain relevant aspects.
- **Poultry** (laying hens and chickens) and Rabbits. In all cases, 3 visits to different farms of 4 hours each, and 2 seminars of 1.5 hours oriented to resolve doubts, prepare reports, solve practical cases, and deepen in certain relevant aspects.
- **Necropsies:** 10 hours per student performing necropsies sent to the Anatomopathological Diagnosis Service of the Faculty of Veterinary Science.

- **Anatomopathological Diagnosis:** Assistance of a minimum of 20 hours to the discussion of the macroscopic diagnosis of clinical cases referred to the Anatomopathological Diagnosis Service of the Faculty of Veterinary Science.
- **Post-mortem Seminars practicum:** 8 one-hour seminars per student.

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

Hygiene, Food Inspection and Control

The course “**Food Hygiene, Inspection and Control**” (14 ECTS, Annual, Year 5) is one of the subjects of the curriculum that provides training on the “Hygiene, Technology and Food Safety” leading to the degree in Veterinary Science, together to the courses “Food Technology”.

The course “Food Hygiene, Inspection and Control” aims to teach the future veterinary professionals the responsibilities within the scope of public health protection, and to provide an integrated approach to food safety (from farm to table), that is the guiding principle of the syllabus, which includes instruction in food hygiene, inspection and control of animal foodstuffs or foodstuffs of animal origin.

Different teaching activities are scheduled: participatory lectures (9 ECTS, 90 h), practical sessions (3 ECTS, 30 h) and a practicum (2 ECTS). The practicum includes practical work in slaughterhouse (24 h) and in food processing pilot plant (6 h)

LECTURES

The programme is developed in a total of 32 lessons divided into two parts:

- **Part I** (45 hours): General concepts and basics of prevention and control of prevention and control of food safety, food control and food inspection (Lessons 1 to 11)
- **Part II** (45 hours): Hygiene, inspection and food control of food of animal origin (meat and meat products, milk and dairy products, fish and fishery products and seafood, egg and egg products, as well as ready-to-eat products and catering establishments) (Lessons 12 to 32)
- Lectures last 1 hour, and are taught 3-4 times a week to 2 groups of students in the time frame of 8-11 AM.

Timetable

- 1st semester: Lessons 1 to 11
- 2nd semester: Lessons 12 to 32

PRACTICE SESSIONS

The practical training corresponding to the course “Food Hygiene, Inspection and Control” includes:

Practical sessions (10 laboratory and case study sessions), where each student spends 30 hours to learn and acquire food legislation skills (3 hours, 30-36 students per group), rules governing the exercise of official food sampling and control (3 hours, 30-36 students per group), surface analysis and water control as part of the control of hygiene in the food industry (3 hours, 10-12 students per group), compliance to the process hygiene criteria and food safety criteria (2 sessions of 3 hours, 10-12 students per group), case studies of food shelf life and food-borne outbreaks (3 hours, 10-12 students per group), and fish and shellfish identification as well as freshness assessment and fish inspection; (3 hours, 10-12 students per group). Finally, 9 hours are used to the study of the methodology for the development and implementation of a self-control plan (HACCP) in the food industry (2 sessions of 3 hours, 20-24 students per group), followed by an exhibition, discussion and assessment of the self-control (HACCP) model developed by the students (3 hours, 10-12 students per group). This practical training is taught by teachers from the staff of the human nutrition and food science unit of the Faculty of Veterinary Science. In addition, an associate teacher who is an external expert on good hygienic practices and HACCP services to food companies collaborates in the HACCP teaching.

Timetable

- 1st semester: PL1, PL2, PL3, PL4 and PL-5
- 2nd semester: PL-6, PL-7, PL-8, PL-9 and PL-10

Place

- Computer classrooms, Faculty of Veterinary Science
- Laboratories of the human nutrition and food science unit, Faculty of Veterinary Science

Teachers

Teachers from the human nutrition and food science unit, including an associate teacher who is an external expert on good hygienic practices and HACCP services to food companies and collaborates in the HACCP teaching.

SLAUGHTERHOUSE PRACTICUM

Slaughterhouse practicum provides veterinary students with in situ/practical qualifications and skills required for working as official veterinarians (responsible for auditing and inspection tasks). In total, students spend 24 hours in this practicum. The teaching activities consist of 3 seminars and 5 practical sessions. Slaughterhouse seminars, of 3 hours of duration each, are taught to 4 groups (24 students per group) and deal with the following subjects: official control on fresh meat in the slaughterhouse, hygiene and certification in slaughterhouse, and official audits in slaughterhouse. Regarding the slaughterhouse practical sessions, they are carried out in the Mercazaragoza slaughterhouse and meat market, and allow students in small groups (5-12 students per group) to know and get confident with daily tasks of slaughterhouse official veterinarians, such as the verification of compliance with rules on animal welfare (protection of animals at the time of slaughter and during transport, among others), the hygienic control and HACCP audits, and on the ante-mortem and postmortem inspection, as well as official food chain information and document control. Other aspects covered during the practical sessions are: slaughterhouse requirements, meat storage, animal identification, specified risk material and other animal by-products, laboratory testing, health marking, and actions following controls, including veterinarian decisions. This practicum training is exclusively taught by two associate teachers who are specifically engaged to the slaughterhouse practicum.

Timetable

- 1st semester: Seminar 1, MP1 and, MP4
- 2nd semester: Seminars 2 and 3, MP2, MP3 and MP5

Place

- Seminars: Faculty of Veterinary Science
- Practical sessions: Mercazaragoza Slaughterhouse and meat market

Teachers

There are two associate teachers, specifically engaged to the slaughterhouse practicum. Both teachers belong to the staff of the Public Health department of the Government of Aragon, and have great expertise as official slaughterhouse veterinarians.

FOOD PROCESSING PILOT PLANT PRACTICUM

Practicum in the food processing pilot plant (6 h). This practicum takes place in the food processing pilot plant of the Faculty of Veterinary Science and students develop specific skills on good hygiene practices in the food industry. More specifically, during this training, students design and develop good hygienic practices for a production process of different foods of animal origin, with the aim of acquiring a professional approach to this food safety management tool. This training is taught by teachers from the human nutrition and food science unit staff of the Faculty of Veterinary Science, including an associate teacher who is an external expert on good hygienic practices and HACCP services to food companies.

Timetable

- 1st semester

Place

- Food processing pilot plant, Faculty of Veterinary Science

Teachers

Teachers from the staff of human nutrition and food science unit, including an associate teacher who is an external expert on good hygienic practices and HACCP services to food companies and collaborates in the HACCP teaching.

FOOD TECHNOLOGY

The general goal of the “**Food Technology**” block (12 ECTS, Annual, Year 5) is to provide knowledge on the composition and quality parameters of food and on the fundamentals of the processes of alteration, conservation and processing of food of animal origin required to train future graduates to perform functions related to food inspection and quality control and food safety.

This part consists of 100 hours divided in 70 hours for lectures in classroom, 20 hours for laboratory and 10 hours for seminars.

The contents of the lectures will be provided to the students. Professor will focus his presentation in those aspects harder to understand. Students should have read the supplied material in advance in order to formulate questions to the professor

Laboratory activities will consist in 5 sessions of 4 hours. The main objective of laboratory activities is to show and demonstrate different issues previously explained in the lectures.

Seminars will be attended by a smaller number of students than lectures. In this activity practical cases will be presented to be solved by students with the support of the professor and some person working in the food industry will be invited to do a presentation.

Practicum in Food Technology

This part consists in 30 hours (4 h of lectures, 18 h of activities in the pilot plant and 8 hours for the presentation of the work conducted in the pilot plant).

In the pilot plant, students will simulate that they are in a food company conducting all steps required for the elaboration of a specific food: quality control of the raw material, elaboration of the foods, control of the final products. These activities will be conducted in coordination with the course: Hygiene, inspection and food control, moreover, good hygienic practices will be carried out for the corresponding food elaborated during this activity

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

The number of elective credits included in the Curriculum is 12 ECTS

Electives are those that the University freely includes in the curriculum so that students choose among them. Some electives may be more demanded by students, so the number of places available for them is limited. In that case, the procedure for the selection of the electives is by the academic record. Those students that have obtained better results in the previous course, have priority to enrol in the elective subjects.



Electives offered at the degree:

Subject Name	Credits	Number of students
Laboratory Animal Science I	3	60
Computer tools for veterinarians	3	60
History of the veterinarian	3	65
Scientific English for veterinarians	6	120
External morphology, morphological assessment and identification	3	60
Ecology and environment	3	60
Laboratory Animal Science II	3	54
Wildlife	3	50
Bee Production and health	3	45

Undergraduate students may obtain 6 ECTS credits by academic recognition for their participation in cultural, sports, student representation, solidarity and cooperation university activities. The number of credits recognized for these activities will be carried out, at the student's request, as electives. For courses, conferences and other activities, credits will be recognized based on the range of hours the activity has.

Likewise, student's participation in the Summer courses at Teruel Campus, extraordinary courses at Zaragoza Campus and courses taught by other summer universities, whose activities have been specifically agreed upon in advance, will be recognized as cultural activity credits.

A maximum of 2 ECTS for university **sports activities** may be recognized per academic year

In order to obtain credits recognition for participation in student's representations activities, students must accredit a 60% minimum attendance.

A maximum of 2 ECTS per academic year may be recognized for **solidarity and cooperation university activities**; students must accredit, a 60% minimum attendance as well

For the recognition of credits for **other university activities**, students must accredit a minimum attendance of 60% and a maximum of 2 ECTS may be recognized per academic year.

Recognition of credits for accredited **knowledge of languages**. Credits may be recognized for knowledge of languages that are not co-official in Spain, a maximum of 2 ECTS may be recognized according to the level accredited in another language than the one obtained in the degree

Credits obtained in **official and non-university studies** may be recognized: higher artistic education, higher degree training cycles, professional arts education and higher degree design, higher level sports education. The number of credits that can be recognized from unofficial universities may not exceed 15% of the total number of credits of the curriculum.

Credits may be recognized for **work and professional experience**, however, it has to be carried out in a recognized Centre or company, whose activity is directly related to the competences of the degree. A copy of the working life or the contract must be presented. The number of credits that can be recognized may not exceed 15% of the total number of credits of the curriculum. These credits will be incorporated into the file with the qualification of "Pass", so they will not be computed for purposes of scaling the academic record

3.1.8. Description of the organization, selection procedures and supervision of the EPT

EPT is a 6 ECTS obligatory Core Subject in Semester 10, 5th year, but it has been moved into the 8th semester, in year 4 because students can perform the external practice during summer time. Students must complete a minimum of 135 hours of practical in external entities (e.g., veterinary clinics, veterinary hospitals, companies, academic institutions, scientific Centres, administration institutes, etc.) in any of the areas linked to Veterinary Science.

The EPT assignment procedure is regulated by the Royal Decree 592/2014 of 11th of July, that be checked on:

<https://estudios.Unizar.es/pdf/procedimientos/Q311.pdf>. The EPT regulation is available on:

<https://veterinaria.Unizar.es/academico/practicas-externas-tuteladas-grado-veterinaria>

A brief summary:

Option 1: Practical Procedure offered by Universa (the Employment and Orientation Service of the University of Zaragoza. To check the list of the companies/institutions that offer vacancies see Appendix 3):

- Student enrolment at Universa as an internship student, completing the online form of the current course.
- The Student will consult the list of Companies/Institutions that offer vacancies.
- The Student will choose up to 5 Companies/Institutions in which he would like to carry out the internships through the External Internship Application Form and will deliver it to Universa.
- Assignment of Company / Institution to each Student by Universa.
- All the information provided by the Student will be decisive for the subsequent assignment of their practice. Seriousness and commitment are requested.
- Universa will notify the Student by e-mail or telephone that he/she has been pre-selected, providing all necessary information to contact the Company/Institution and reach an agreement regarding dates, times, tasks. This pre-selection does not mean "Practice achieved", since it is the Company/Institution that makes the final decision.
- Once the practices for their evaluation are finished, the Student will have to deliver to their Tutor at the Faculty:
 - ↪ The Memory of Activities.
 - ↪ The Student Evaluation Questionnaire completed by the Tutor in the Company / Institution
 - ↪ The Tutor in the Faculty will evaluate said Memory and will qualify the Student using the Final Student Qualification Form.

Option 2: Practical Procedure sought by the student

- Student enrolment at Universa as an internship student, completing the online form of the current course.
- The Student will contact the Company/Institution in which he has an interest to develop his practice.
- The Student will inform Universa in such Company / Institution.
- The Student and the Company will complete the Practices Data Document.
- The assignment Company / Institution and University Tutor to the Student (forecast) will be published on this website, once the Student communicates what has been agreed with the Company / Institution.
- Once the practices for their evaluation are finished, the Student will have to deliver to their Tutor at the Faculty:
 - ↪ The Memory of Activities.
 - ↪ The Student Evaluation Questionnaire completed by the Tutor in the Company / Institution.
 - ↪ The Tutor in the Faculty will evaluate said Memory and will qualify the Student using the Final Student Qualification Form.

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

Clinical practicum in small, exotic and equine animals

In order to improve the quality control of clinical, training different logbooks have been designed in order to ascertain the essential skills that our students should achieve during their clinical practice. These skills are commonly called "One Day Competences", are listed and must be all achieved by the end of the 10th semester.



It depends on each subject, but for example, in Emergency Care practices, the emergency and hospitalization skills to be acquired by students in the Clinical practicum in small animals, exotic and equine animals are:

Clinical practicum in small, exotic and equine animals Assessment

Block 1: internal Medicine and specialities (Small and exotic animals) The student must present to the Coordinator his/her signature sheet completed by the teachers as proof that student has attended and taken advantage of each of the scheduled sessions.

Teachers may ask students questions to check if they have reviewed the basic knowledge in order to make the most of the practice.

Block 2 Surgical Area (Small Animals).

- Initial assessment at the beginning of the internship (10 %)

In the first day of practice in this block, all students convened on practical theoretical knowledge of basic aspects of surgery and anaesthesia will be evaluated. These contents will be available previously in the digital teaching ADD. During the presentation of the subject, they will be told that they should review these contents prior to the practical sessions as part of their personal work and that they will also be evaluated. With this objective, the teacher will carry out a theoretical-practical evaluation that allows him to assess the basic knowledge and skills necessary for the use of the practice. The student will be scored on 10 points out of the 100 that complete the subject.

- Evaluation at the end of the practical sessions (15 %)

Students will be evaluated during the development of the last practice. Each student will be evaluated by means of a rubric to verify that they have acquired the learning results 9, 10 and 11 listed in section 2.2. of the teaching guide.

The student must obligatorily present to the Coordinator his signature sheet completed by the teachers as proof that he has attended and taken advantage of each of the scheduled sessions.

Block 3 Emergencies.

Practice report (0.5%)

The student will make an individual report of all cases attended during the practice week, which will be presented on the last day and assessed by the teacher.

Written examination based on clinical cases (4,5%)

It will be assessed by means of a written examination, which will be 5% of the final mark and which will take place together with the written examination of block 1.

The examination will include clinical cases related to the emergency, ICU and hospitalisation protocols presented at the seminars and which the student will have been able to practise voluntarily on duty shifts.

The student must present to the Coordinator his/her signature sheet completed by the teachers as proof that he/she has attended and taken advantage of each of the scheduled sessions.

Block 4 Necropsies. Will be evaluated by means of a written exam, which will suppose 5% of the final grade. The examination will consist on necropsies cases

Block 5 Equine. A theoretical-practical examination consisting on questions about bio-model practices (trans-rectal palpation in cadavers, nerve blocks and major interventions in the head and surgical techniques in extremities). Students must present to the Coordinator his/her signature sheet completed by the teachers to check if they have attended and taken advantage of each of the scheduled sessions.

Clinical Practicum of Production species

Competences to be acquired:

1. Intervene in animal supply farms preserving biosecurity measures.
2. Detect and correct structural deficiencies in facilities, inadequate ways of handling animals and their food, as well as applying and assessing compliance with animal welfare regulations.
3. Detect sick animals and initiate the diagnostic protocol, being able to follow the appropriate methodology to reach a diagnosis through clinical examination, performing autopsies and taking appropriate samples, as well as their correct shipment to support laboratories in the diagnosis and interpretation of the results.
4. Establish the most appropriate treatment and corrective measures for controlling and, if possible, eradicating of the problem.

Completed Logbooks:

- Assessment report, made by the associate professor at the end of the internship. This activity will assess the assimilation of knowledge, as well as the attitude of the student throughout the practices carried out with the associate professor. This report may also be based on results of objective tests related to what has been observed and learned in the practices (Learning outcomes 1-11).
- Report made by the student, individually or in groups, based on the practices carried out in farms, or on topics relevant to professional practice in the different animal species. In the post-mortem section of performing necropsy they will prepare, individually or in groups, a macroscopic pathology report of the cases diagnosed during their practice week. (Learning outcomes 1-11). This report will be evaluated and will be part of the qualification of this section.

Learning outcomes:

1. Get to know the general characteristics of the livestock sectors in Spain, and their situation on a European and world scale. It includes the socio-economic and structural conditions of animal production and the marketing of its products, with reference to the legislative, geographical, economic, health and environmental frameworks.
2. Know production systems and animal handling techniques.
3. Know the characteristics of housing and facilities and their impact on different production systems and animal welfare.
4. Know the various factors that influence the quality of animal products, and is able to determine the causes of problems that may affect it.
5. Know the objectives and criteria of genetic selection, the techniques used in genetic improvement, and their impact on animal health and productivity.
6. Know the main types of feed, pasture and fodder involved in feeding and their use in each production system. Is able to formulate adequate rations to cover the requirements of the animals according to the stage of their productive cycle and production system and to evaluate the adequacy of the ingredients and nutritional levels used in the feeding of the animals.
7. Deal with the diagnosis of the main diseases affecting animals for slaughter, based on knowledge of their - aetiology, epidemiology, pathogenesis, clinical symptomatology, and injuries produced. Know how to perform necropsies, choose the samples and request the most appropriate diagnostic techniques for each case and interpret the results.
8. Establish and apply the most appropriate treatment to each pathology and to implement prevention and control measures to prevent the appearance of the most important diseases.
9. Know and understand the reproductive characteristics and mechanisms involved in the birth of production animals, as well as the treatment of problems associated with it, and is able to control and organize the reproductive activity of animals.
10. Take a clinical history and write a veterinary report, as well as communicating with other professionals using correct technical language.
11. How to apply methods of technical and economic management and analysis of sustainability in the different livestock farms.

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

The degree of Graduate in Veterinary Science consists, according to current legislation, of 300 ECTS distributed over 5 academic courses of 60 ECTS each. The curriculum is structured in accordance with the Order ECI / 333/2008, of February 13, which establishes the requirements for the verification of official university degrees that enable the exercise of the veterinary profession, in which the Annex describes five competency modules to be acquired, with a minimum number of ECTS each.

On January 13, 2010, the evaluation of the request for verification of the Degree in Veterinary Science was received. After responding, on February 3, to the observations made by ANECA in such evaluation, on March 27, 2010 the favourable report was received, and on June 7, 2010 the final positive verification for the Degree in Veterinary Science was given by the Universities Council. The implementation of the new studies of the Degree in Veterinary Degree was authorized by agreement of June 22, 2010 of the Government of Aragon (Order of June 28, 2010 of the Minister of Science, Technology and University, published in the BOA of July 14, 2010). The official nature of the degree and its registration in the RUCT was published in the Resolution of December 23, 2010 (BOE, 01/14/2011), publishing the curriculum of the Degree in Veterinary Degree in the BOE of 07/02 / 2011 and in the BOA of 09/02/2011.

Regarding how and whom the core curriculum is decided, the Verification report of the Veterinary degree was set up following the regulations set by the BOE and ANECA, the information collected in the Veterinary White Paper and of course the EAEVE guidelines.

In the Agreement of November 13, 2007, of the Governing Council of the University of Zaragoza, it is stated the creation of a Commission for each title, chaired by the Rector or in a delegated person, that must be advised by external experts, as specified in the section 2.3 of the annex of RD 1393/2007.

In the case of the Commission for the Veterinary Degree, the Commission was proposed by the Faculty Council, forwarded to the General Secretary for its subsequent approval by the Governing Council of the UZ.

The Commission was composed by 10 academic permanent staff, 1 supporting staff, 3 external experts, 3 students graduated in Veterinary from the University of Zaragoza, and 9 work-group for practicums and integrations:

- Working Group / Integration Consultation in Ruminants (13 academic staff)
- Working Group / Integration Consultation in Porcine (9 academic staff)
- Working Group / Integration Consultation on Aquatic and Exotic Animals (7 academic staff)
- Working Group / Integration Consultation in Pets (11 academic staff)
- Working Group / Integration Consultation in Equine (10 academic staff)
- Working Group / Integration Consultation on Poultry and Rabbits (9 academic staff)
- Working Group / Consultation of Practicum of Pets and Equine (6 academic staff)
- Working Group / Consultation of Production Animal Practicum (9 academic staff)
- Working Group / Consultation of Module of Food Technology and Hygiene, Inspection and Food Control (6 academic staff)

During the years of implementation of the degree, no substantial modifications of the original report have been requested [[Verification Report of the Degree in Veterinary Science](#) and [Annexes](#)], however, it has been necessary to make modifications related to the adaptation to the Ministry of Education, Culture and Sports request, attribution to level 3 of Official Degrees

In relation to the initial report, minor modifications approved by the University of Zaragoza have been made, namely regarding:

1. In the verification report it was considered that in order to enrol in fourth or fifth year subjects, no more than 9 credits of basic or core subjects of first and second years could be pending. These limitations were introduced before having the current permanence rules of the University and they could clash. Therefore, it was proposed to request the removal of these limitations from the University Degree Studies Commission.
2. Modification of the requirement having passed at least 150 ECTS requirement in order to enrol in "External supervised practices" subject. Possibility of enrolment of the subject External practices (EPT) supervised in 4th. It was convenient that 4th year students could enrol in the Subject External Practices in the period of February registration to be able to do the internships in the summer. The reason to modify this requirement is to enable students to defend their undergraduate dissertation and obtain the degree finishing the studies in 5 years as contemplated the verification report and the plan published in BOE.
3. In view of the need to schedule the elective "Bee Production and Health" in the second four-month period of the academic year (due to the type of practices to be carried out), it was considered necessary to move all the electives to the second four-month period, so it was requested to the Degree Studies Commission.
4. Assignment to a level 3 (Master) in MECES
5. Activation of the subject of Ecology and Environment for the 2016-2017 academic year, transferring this subject to the 2nd course for being less credits offered in this course.
6. Elimination of compulsory enrollment at the same time of the subjects "Hygiene and food inspection and "Food Technology".

The curriculum is communicated to staff, students and stakeholders by electronic means through the following public web pages:

- https://estudios.unizar.es/estudio/ver?id=130&anyo_academico=2019
- <https://veterinaria.unizar.es/academico/plan-estudios-grado-veterinaria>

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	312	10,5	9	202,5	11		14	569
Year 2	320	9	10	152	7		2	500
Year 3	366	20	20	104,5	94,5	16,5	9	630,5
Year 4	469,5	21	4	78	24	117	14,5	728
Year 5	221,5	32	155	116		200	195,5	920
Electives	133		23	113	17	7	11	304
Year 6 (EPT)*								

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

*Included in year 5th



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

Subjects	A	B	C	D	E	F	G	H
Basic subjects								
Medical physics	8			12				20
Chemistry (inorganic and organic sections)	8			12				20
Animal biology, zoology and cell biology	18	2		7	3			30
Feed plant biology and toxic plants	45	3		17				65
Biomedical statistics	12			8				220
Basic Sciences								
Anatomy, histology and embryology	125	1,5	7	87,5			10	231
Physiology	78	4		27	7			116
Biochemistry	40	5		15				60
General and molecular genetics	60	2		40				102
Pharmacology, pharmacy and pharmacotherapy	60	5	2	16			7	90
Pathology	52			14				66
Toxicology	25			30				55
Parasitology	40			20				60
Microbiology	40		5	21			2	68
Immunology	20		5	9				34
Epidemiology	24			12				36
Professional communication			50					50
Professional ethics	3			3				3
Animal ethology	25					5		30
Animal welfare	27	2	1	10	4			44
Animal nutrition	42			18				60
Clinical Sciences								
Obstetrics, reproduction and reproductive disorders	40	4		12,5	4,5			61
Diagnostic pathology	50	8		16	14			88
Medicine and surgery including anaesthesiology	40			26		4		70
Clinical practical training in all common domestic animal species	351,5	43	2	31,5		298	68,5	794,5
Preventive medicine	35			9		6		50
Diagnostic imaging	42	3				16,5		61,5
State veterinary services and public health	21			9				30
Veterinary legislation, forensic medicine and certification	44		18	16			2	80
Therapy in all common domestic animal species	150					100		250
Propaedeutic of all common domestic animal species	8				46			54
Animal Production								
Animal Production and breeding**	145		3	58,5	29	18	5	258,5
Economics	45	2		13			2	62
Animal husbandry	30				15			45
Herd health management	10	2,5				20		32,5
Food Safety and Quality								
Inspection and control of food and feed	60		2	15			0	77
Food hygiene and food microbiology	30			15			0	45
Practical work in places for slaughtering and food processing plants	4	9	8	18		21	0	60
Food technology including analytical chemistry	70	10		20			0	100
Professional Knowledge								
Professional ethics & behaviour	10			3				13
Veterinary legislation	20			3				23
Veterinary certification and report writing	5							5
Communication skills			60					60
Practice management & business	15		2	6				23
Information literacy & data management			50					50

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

* Comprises Agronomy + Vegetal Toxicology

** Comprises Ethnology and the production part of: Porcine integration course + Ruminant integration course + Poultry and rabbit integration course + Aquatic integration course

Table 3.1.3 Curriculum hours taken as electives for each student

Electives	A	B	C	D	E	F	G	H
Basic Sciences								
IT Tools for Vets	10		5	20				35
History of Veterinary Science	15		7	3				25
Scientific English for Veterinary Science				60				60
Clinical Sciences								
Laboratory Animal Science - I	24			4	2			30
Ecology and the Environment	15		11	4			1	30
Laboratory Animal Science - II	20			3		7		30
Wildlife	15			10	5			30
Animal Production								
External Morphology: Morphological Assessment and Identification	15			3	5			33
Bee Production and Health	19			6	5			30

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

Subjects	Minimum duration (weeks)	Year of programme
Production animal (pre-clinical)	4	4 th
4th	4	4 th
Production animals (clinical)	8	5 th
Companion animals (clinical)	**	**
FSO & VPH	8	5 th

** All practices are developed as clinical rotation in the VTH

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

Types	List of clinical rotations (Disciplines/Species)	Duration (weeks)	Year of programme
Intra-mural (VTH)	Clinical Practice: Small, Exotic and Equine Animals	8	5 th
Ambulatory clinics	Clinical Practice: Small, Exotic and Equine Animals	2	5 th
	Clinical Practice: Production Animals	6	5 th
FSQ & VPH	Food Hygiene, Inspection and Control	2	5 th
	Food Technology	2	5 th

3.2. Comments

The new syllabus implemented in 2010/2011 includes a distribution of contents suitable for the acquisition of all the competences of the veterinary profession.

Advantages of this new syllabus includes:

- Significant increase in training on clinical sciences.
- Increase in the number of farms where our students can develop extra-mural practical training.
- Increase hands-on practice.
- Increase transversal competences through the Undergraduate Dissertation

Among the issues that the QA System of the FVM considers that should be addressed in a future revision of the syllabus, special mention should be made to:

- Revision of the contents of the Integration courses
- Revision of the placement of B1

3.3. Suggestions of improvement

- Surveys for graduate students in order to assess the Veterinary degree should be deployed.
- Draw up of the teaching guidelines of the practice sessions and incorporation to the official teaching guidelines.
- Draw up of the ACADEMIC PROGRAMMING RULES OF THE VETERINARY FACULTY OF THE UNIVERSITY OF ZARAGOZA. Description of how and by whom theoretical and practical teaching is planned and modified.
- Avoid overlapping of theoretical and practical activities.
- Reorganize the schedules of the elective subjects.





4.

Facilities and Equipment

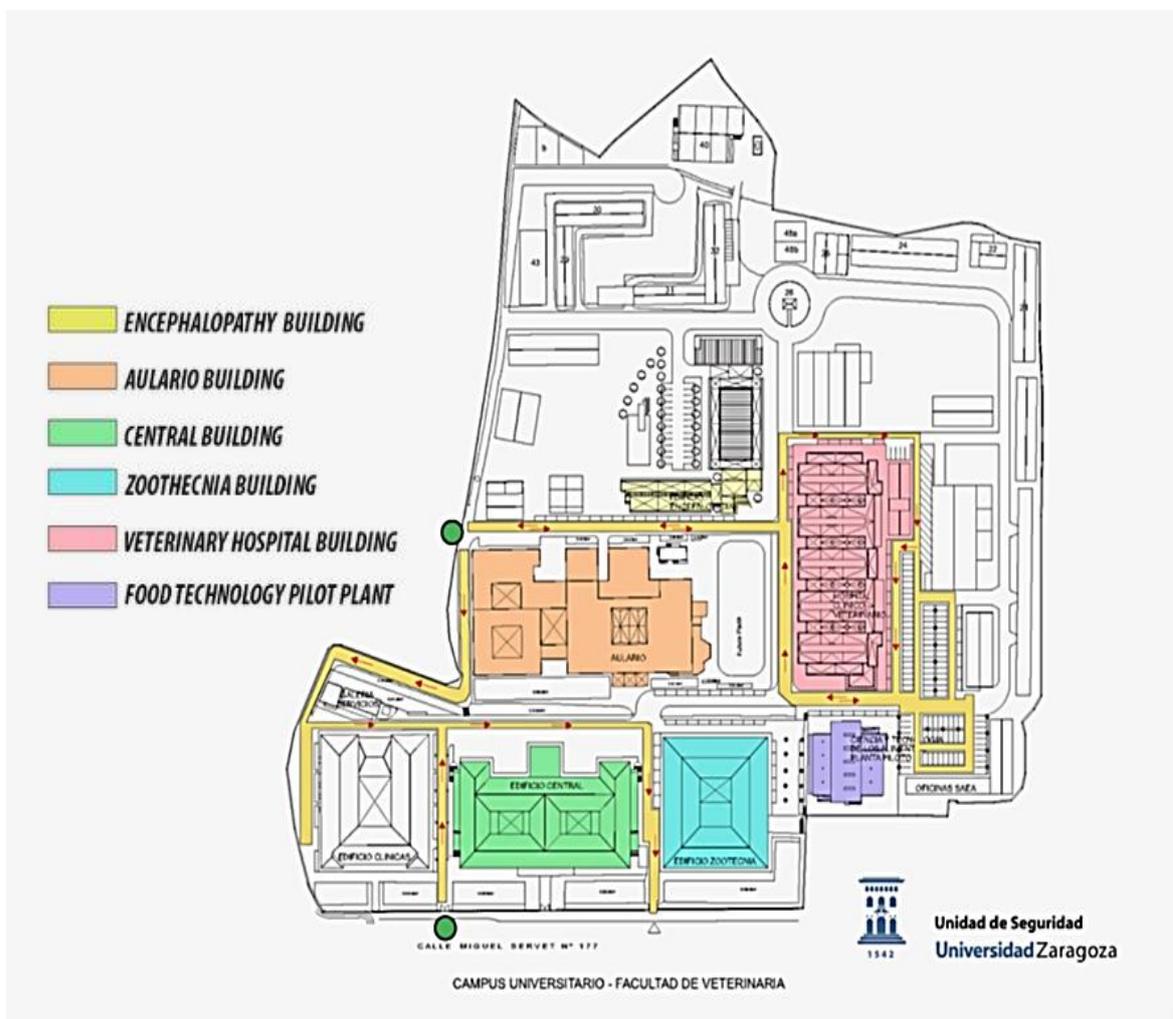
4. FACILITIES AND EQUIPMENT

4.1. Factual information

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

The Veterinary Faculty of Zaragoza (FVZ) is located in University of Zaragoza (UZ) Campus of Miguel Servet occupying a total area of 78.764 m². The FVZ is well connected by car as it is close to the Zaragoza 3rd and 4th ring road; the location is well served by public transport (lines 38 and 25 pass near the Faculty, at a distance of few minutes walking).

The picture down below shows the campus areas and the location of the most important buildings and the table that follows, the description of the buildings can be found with its surface and the most remarkable facilities.



Facilities and equipment

Building*	Surface	Facilities
Central	7.744,10	Teaching and research laboratories
		Division of Physics, Chemistry, Mathematics, Physiology, Genetics, Biochemistry, Microbiology, Pharmacology, Toxicology, Languages
		Lecturing halls (7)
		Dissection room
		Dean and Vice dean offices, Faculty Secretariat, copy office, University Union, Administration office
Zootecnia	5.589,00	Anatomy Department
		Divisions of Food Hygiene, Food Technology, Animal Nutrition and Zootechny, Agriculture and Agricultural Economy
		Teaching and research laboratories
		Computers room (2)
Food Technology Pilot Plant	1069,30	Microbiology laboratory
		Physical and chemical analysis laboratory
		Unit operation laboratory
		Sensory laboratory and kitchen
		In processing room: Unitary Equipment: -Heat thermal treatment -Cold treatment -Extraction -Drying -Packaging
		In processing lines for: -Dairy products -Bakery -Cereal processing equipment -Wine making -Olive oil processing -Fruit and vegetable processing equipment -Meat processing
Aulario	5.322,00	Lecturing room (6)
		Seminar room (2)
		Computer room (1)
		Library
		Cafeteria and self-service restaurant
		Lunch area (with microwaves)
		Division of Histology and animal Pathology
		Necropsy room
		Computer service
		Auditorium
Graduates lecture room		
UNIZAR Veterinary Teaching Hospital and. Animal Pathology Area	7.370,15	Small animal services: Main hall and waiting room for small animals (dogs and cats separately) -Small animal consulting room (8) -Anaesthesia service: A room adjacent to the surgical area -Three full equipped surgery theatre -Hospitalization Service: two rooms for intensive care of dogs and cats, including isolation units.
		Large animal service: -A reception room -One exploration room with examination stanchion -8 boxes for stable horses -Wine making -2 anaesthesia induction/recovery room. -1 surgery theatre fully equipped
		Central service (large and small animals): -Administrative area -Pharmacy service -Sterilizing room -Laundry -Two Four-bedroom apartment (equine and small animals) -Diagnostic imaging service (W-Ray: three rooms lead covered, one for large animals; small animal Ultrasound room -One lab with the necessary equipment for haematological and biochemical analysis. -Seminar room

*All buildings have Wi-Fi connection, access for disabled and audio-visual equipment

4.1.2. Description of the premises for:

-)Lecturing

Wide rooms are mainly used for lecturing large groups due to its great capacity, thus, most of the theoretical classes are taught within them. Rooms are equipped with multimedia devices and computers, wheelchair access and some have air conditioning.

LECTURING				
Premises	Location	number	Surface(M ²)	Total places
Lecturing room	Central Building	7	649	708
Lecturing room	Aulario Building	4	1008	960
Conference hall	Aulario Building	2	453	423
Master/seminar room	Aulario Building	1	43	25
SUBTOTAL		14	2153	216

-)Group work

Smaller rooms for the above mentioned purpose are used, where either teacher can organize discussion wards or students can meet up for group's tasks.

GROUP WORK				
Premises	Type	Location**	Surface(M ²)	Total place
Reproduction Seminar*	Seminar	Hospital, 2 nd floor	21	10
Parasitology I Seminar*	Seminar	Hospital, 1 st floor	20	10
Parasitology II Seminar*	Seminar	Hospital, 2 nd floor	14	10
General Pathology library Seminar*	Seminar	Hospital, 2 nd floor	25	12
Surgical Pathology Seminar*	Seminar	Hospital, 2 nd floor	25	10
Infectious Diseases Seminar*	Seminar	Hospital, 2 nd floor	28	10
Pathology meeting room Seminar*	Seminar	Hospital, 1 st floor	52	14
Clinical Cases Seminar*	Seminar	Hospital, ground floor	401	12
Audio-visual Reproduction Seminar	Seminar	Hospital, 1 st floor	26	14
Reading room Library*	Study room	Aulario, Library	560	192
Reading room Newspaper Library*	Study room	Aulario, Library	87	31
Multipurpose room*	Study room	Aulario, ground floor	92	66
Hospital Study room*	Study room	Hospital, 1 st floor	211	130
Computer room for study*	Study room	Hospital, 1 st floor	67	21
Computer room A1	Study room	Aulario, ground floor	64	17
Central Classroom*	Computer Classroom	Central, ground floor	82	25
Classroom H-1*	Computer Classroom	Hospital, 1 st floor	45	24
Classroom H-2*	Computer Classroom	Hospital, 1 st floor	26	8
Classroom Z-2	Computer Classroom	Zootechnics, ground floor	43	15
Classroom Z-2	Computer Classroom	Zootechnics, ground floor	46	19
Anatomy Dissection room*	Practical teaching	Central, Anatomy Unit (Dpt. AEAG)	125	
Necropsy room*	Practical teaching	Aulario, Pathological Anatomy Unit (Dpt. PA)	145	
Exploration room 1-Ruminants	Practical teaching	SEA, Teaching Farm	98	
Exploration room 2	Practical teaching	SEA, Teaching Farm	58	
Exploration room 3	Practical teaching	SEA, Teaching Farm	58	
Ovine paddock	Practical teaching	SEA, Teaching Farm	100	
Bovine paddock	Practical teaching	SEA, Teaching Farm	80	
Porcine paddock	Practical teaching	SEA, Teaching Farm	80	
SUBTOTAL			2554	676

* Endowed with air conditioning

**All buildings have Wi-Fi connection, access for disabled and audio-visual equipment

-) Practical work

Group work is carried out in Seminar rooms, laboratories and teaching farms. Laboratories and rooms for clinical practices are fully equipped with different multimedia devices. Small teaching farms lodge different animal species mainly used in preclinical subjects. Biosecurity is a priority so laboratories are compliant and properly signposted accordingly to the national and regional legislation. Students have to observe the biosecurity rules and wear the personal biosecurity equipment on each practice.

Premises ¹	Type	Location**	Department/Unit	Surface(M ²)
Chemistry Practices Lab. *	Teaching lab	Central	Chemistry Unit	83
Physical Practices Lab. *	Teaching lab	Central	Physical Unit	61
Physiology Practices Lab. *	Teaching lab	Central	Physiology	55
Genetics Practices 1 Lab*	Teaching lab	Central	Dpt. AEAG, Genetics Unit	48
Genetics Practices 2 Lab*	Teaching lab	Central	Dpt. AEAG, Genetics Unit	75
Microbiology Practices Lab	Teaching lab	Central	Dpt. PA, Microbiology Unit	48
Immunology Practices Lab*	Teaching lab	Central	Dpt. PA, Microbiology Unit	48
Student Lab (Toxicology) *	Teaching lab	Central	Toxicology Unit	71
Pharmacology Practices Lab*	Teaching lab	Central	Pharmacology Unit	76
Biochemistry Practices Lab*	Teaching lab	Central	Biochemistry Unit	132
Dissection room*	Teaching lab	Central	Dpt. AEAG, Anatomy Unit	125
Nutrition Practices Lab	Teaching lab	Zootechnics	Dpt. PACA, Nutrition Unit	74
Student Lab (Bromatology Unit)	Teaching lab	Zootechnics	Dpt. PACA, Bromatology Unit	50
Student Lab (Bromatology Unit)	Teaching lab	Zootechnics	Dpt. PACA, Bromatology Unit	50
Student Lab (Agronomy Unit)	Teaching lab	Zootechnics	Agronomy Unit	100
Student Lab (Production Unit) *	Teaching/research lab	Zootechnics	Dpt. PACA, PRODUCTION Unit	108
Instrument Room (Food Technology Unit) *	Teaching/research lab	Zootechnics	Dpt. PACA, Food Technology Unit	40
Technology Milk Lab*	Teaching/research lab	Zootechnics	Dpt., PACA, Food Technology Unit	40
Technology Meat Lab*	Teaching/research lab	Zootechnics	Dpt., PACA, Food Technology Unit	40
Technology Vegetables Lab*	Teaching/research lab	Zootechnics	Dpt., PACA, Food Technology Unit	100
Technology Food Lab*	Teaching/research lab	Zootechnics	Dpt., Anatomy Pathological Unit	70
Histology Microscope room*	Teaching lab	Aulario	Dpt.PA, Histology Unit	77
Applied Genital anatomy Lab*	Teaching lab	Hospital	Dpt.PA, Reproduction Unit	23
Embryo Technology Lab*	Teaching lab	Hospital	Dpt.PA, Reproduction Unit	27
Seminal Technology Lab*	Teaching lab	Hospital	Dpt.PA, Surgical Pathology Unit	24
Teaching Surgery*	Teaching lab	Hospital	Dpt.PA, Medical Pathology Unit	47
General and Medical Pathology Lab 1*	Teaching lab	Hospital	Dpt.PA, Medical Pathology Unit	52
General and Medical Pathology Lab 2	Teaching lab	Hospital	Dpt.PA, Medical Pathology Unit	48
Propaedeutic Practice I Lab Infectious Diseases*	Teaching lab	Hospital	Dpt.PA, Infect. Diseases Unit	40
Infectious Diseases Practice I Lab*	Teaching lab	Hospital	Dpt.PA, Infect. Diseases Unit	45
Infectious Diseases Practice II Lab*	Teaching lab	Hospital	Dpt.PA, Infect. Diseases Unit	48
Parasitology Practice Lab* ¹	Teaching lab	Hospital	Dpt.PA, Parasitic. Diseases	48
Parasitic Diseases Practice A Lab* ¹	Teaching lab	Hospital	Dpt.PA, Parasitic. Diseases	48
Parasitic Diseases Practice B Lab* ¹	Teaching lab	Hospital	Dpt.PA, Parasitic. Diseases	20
Basic Operations Lab* ¹	Teaching lab	FTPP	Dpt. PACA	55
Physical-Chemical analysis Lab*	Teaching lab	FTPP	Dpt. PACA	55
Microbiological analysis Lab*	Teaching lab	FTPP	Dpt. PACA	55
Sensorial analysis Lab (tasting room) *	Teaching lab	FTPP	Dpt. PACA	13
General Lab 1*	Teaching lab	FTPP	Dpt. PACA	20
General Lab 2*	Teaching lab	FTPP	Dpt. PACA	20
General Lab 3*	Teaching lab	FTPP	Dpt. PACA	20
General Lab 4*	Teaching lab	FTPP	Dpt. PACA	20
Processing room*	Teaching lab	FTPP	Dpt. PACA	190

*Endowed with air conditioning

**All buildings have Wi-Fi connection, access for disabled and audio-visual equipment

¹ Premises for teaching purposes

Premises ²	Type	Location**	Department/Unit	Surface(M ²)
Chemical Research Lab.	Research Lab.	Central	Chemistry Unit	55
Physiology 1_ Research Lab.	Research Lab.	Central	Physiology Unit	37
Physiology 2_ Research Lab.	Research Lab.	Central	Physiology Unit	20
Physiology 3_ Research Lab.	Research Lab.	Central	Physiology Unit	18
Physiology 4_ Research Lab.	Research Lab.	Central	Physiology Unit	25
Genetic Research Lab.	Research Lab.	Central	Dpt. AEAG, Genetics Unit	71
Microbiology Research Lab.	Research Lab.	Central	Dpt. PA, Microbiology Unit	46
Toxicology Research Lab.	Research Lab.	Central	Toxicology Unit	41
Pharmacology Research Lab.	Research Lab.	Central	Pharmacology Unit	58
Biochemistry Research Lab.	Research Lab.	Central	Biochemistry Unit	32
Biochemistry Research Lab.	Research Lab.	Central	Biochemistry Unit	51
Anatomy Research Lab.	Research Lab.	Zootechnics	Dpt. AEAG, Anatomy Unit	46
Anatomy Research Lab.	Research Lab.	Zootechnics	Dpt. AEAG, Anatomy Unit	41
Nutrition Research Lab.	Research Lab.	Zootechnics	Dpt. PACA, Nutrition Unit	49
Bromatology Research Lab.	Research Lab.	Zootechnics	Dpt. PACA, Bromatology Unit	82
Agronomy Research Lab.	Research Lab.	Zootechnics	Agronomy Unit	120
Histology Research Lab.	Research Lab.	Aulario	Dpt. PA, Anatomy Pathological Unit	45
Histology_1 Research Lab.	Research Lab.	Aulario	Dpt. PA, Anatomy Pathological Unit	20
Histology_2 Research Lab.	Research Lab.	Aulario	Dpt. PA, Anatomy Pathological Unit	20
Histology_3 Research Lab.	Research Lab.	Aulario	Dpt. PA, Anatomy Pathological Unit	20
Histology_4 Research Lab.	Research Lab.	Aulario	Dpt. PA, Anatomy Pathological Unit	20
Histology_5 Research Lab.	Research Lab.	Aulario	Dpt. PA, Anatomy Pathological Unit	20
Reproductive Biotechnology Research Lab.	Research Lab.	Hospital	Dpt. PA, Reproduction Unit	5
Ichthyology Lab.	Research Lab.	Hospital	Dpt. PA, Reproduction Unit	20
Genetics and Pathology Lab. (GenPatVet)	Research Lab.	Hospital	Dpt. PA, Reproduction Unit	20
General Pathology Research Lab.	Research Lab.	Hospital	Dpt. PA, Infect. Diseases Unit	47
Lab. I – General	Research Lab.	Hospital	Dpt. PA, Reproduction Unit	19
Lab. II - Serology	Research Lab.	Hospital	Dpt. PA, Infect. Diseases Unit	19
Auxiliary Laboratory	Research Lab.	Hospital	Dpt. PA, Infect. Diseases Unit	24
Lab. IIIa – Virology	Research Lab.	Hospital	Dpt. PA, Infect. Diseases Unit	18
Parasitology Lab. A	Research Lab.	Hospital	Dpt. PA, Infect. Diseases Unit	18
Parasitology Lab. B	Research Lab.	Hospital	Dpt. PA, Infect. Diseases Unit	21
Parasitology Lab. C	Research Lab.	Hospital	Dpt. PA, Infect. Diseases Unit	21
Parasitology Lab. I	Research Lab.	Hospital	Dpt. PA, Infect. Diseases Unit	20
Parasitology Lab. II	Research Lab.	Hospital	Dpt. PA, Infect. Diseases Unit	20
Microscopy Room	Research Lab.	Hospital	Dpt. PA, Infect. Diseases Unit	24
Real Time PCR Lab.	Research Lab.	Hospital	Hospital	10
Cell Cultures I Lab.	Research Lab.	Hospital	Hospital	14
Cell Cultures II Lab.	Research Lab.	Hospital	Hospital	14

**All buildings have Wi-Fi connection, access for disabled and audio-visual equipment

² Premises for practicing and researching purposes

4.1.3. Description of the premises for housing

-) Healthy animals:

PREMISE	Nº	AREA (M ²)
Examination area	2	60
Lameness examination area	1	350
Paddocks	2	600
Shoeing stalls	1	55
Kennel*	3	112,05
Rabbits box	69	29,46
Sheep stalls**	2	153,78
Swine stall***	1	81,80
Laying hens	20	20
Laying hens stalls	1	10
Broilers stalls	1	200
Bovine stall	1	39,67
Exotic area	1	28,95
TOTAL	105	1740,71

*Each kennel has 1.40 m² indoor x 4.5 m² outdoor area

** Each Sheep stall has an outdoor and indoor area.

*** Within the swine stall 4 pigsties, maternity and exploration area are included.

-) Hospitalised animals:

PREMISE	Nº	AREA
Hospitalisation & intensive care dog ward	2	35
Hospitalisation & intensive care cat ward	1	17
Horses stalls	7	16
Horse intensive care-Mother foal stall	1	22
TOTAL	11	90

-) Isolated animals:

PREMISE	Nº	AREA (M ²)
Infectious Diseases Isolation Room for dogs, cats and exotic animals.	2	36,33
Quarantine	2	55 m
TOTAL	4	91,33

4.1.4. Description of the premises for:

-) Clinical activities

1. Small and Exotic Animals

– **Small Animal Area:** Lobby, cat/dog waiting rooms, 10 consulting rooms: one of them for chemotherapy application and another for ultrasound examinations. There are four surgery rooms, one of them for orthopaedics surgery and another one for dentistry procedures. There are two hospitalization areas:

1. Non-Infectious patients:

- a) Dog's section
- b) Cat's section

2. Infectious patients:

- a) Dog's section
- b) Cat's section

Students help in the hospitalization area and learn how to perform different procedures and control postoperative follow-up of the patients

– The **Small Animal Internal Medicine Service** includes first-opinion consultations (2 rooms) and specialty consultations: dermatology, neurology, oncology, urology, cardiology, endocrinology, reproduction and ethology. Students take part of both Internal Medicine and specialty consultations.

– The **Small Animal Surgery Service** includes consultations and surgery procedures of soft tissue surgery, orthopaedics, ophthalmology, dentistry and interventional radiology procedures. Students take part in surgeries. The level of participation depends on the procedure difficulty and the skills of the student.

– Anaesthesia service is in charge of the whole procedure, from preanaesthetic examination. At small animal and exotic animal area, there are three aesthetic units, and another one at the large animal area. Students attend pre-anaesthetics consultation and perform general examination and anamnesis. They also take part in anaesthetic procedure, from tranquilization to post-operative follow-up.

– **Exotic Animal Service:** includes consultation and also surgical procedures. Activities are performed in the Veterinary teaching hospital as well as in an external veterinary clinic. Students attend the consultation and help in the surgical procedures.

2. Large Animals

Large Animal HCV's activities are divided into 2 main areas:

- The equine medicine and surgery service.
- The small ruminant medical service (SCRUM).

SCRUM activity is carried out in the livestock facilities outside the hospital building and equine medicine and surgery service is performed within the hospital facilities.

The equine medicine and surgery service.

The equine medicine and surgery service is formed by two veterinary surgeons and a veterinary for anaesthesia and critical care and a person in charge of performing various functions such as storage, cleaning stalls, etc. An ambulatory equine practitioner (and associate professor) collaborates with the service staff in some elective or emergencies cases.

In addition to this staff, this service has 18 internal students (undergraduate students of the 4th and 5th year), who perform guards in small groups of 24 hours in situ at the hospital. Interns actively participate in all clinical duties in the equine clinical service of the HCV (medicine, surgery, anaesthesia, emergencies and hospitalization).

The equine medicine and surgery service provides 24-hours/365-days continuous care equine patients and emergency service), with veterinary surgeons and/or interns on site with a clinician on call who is in charge of taking the emergency phone calls. Students have to attend to emergencies for a whole week in which they will get involved in protocols, emergency techniques, how to assist hospitalized patients and attend surgery and emergency consultations when required by the clinician in charge through a message, even on night shifts. Furthermore, during the academic year, students will have to spend one night shift in an agreed clinic where, in coordination to the School, will have to submit a registration sheet with all the cases that they have taken care of together with a clinician in order to discuss them with a professor at the School afterwards

These service facilities are composed of 7 stall boxes, 2 of which, are suitable for intensive care or mother-foal stall, 2 operating theatres with their respective induction-recovery padding boxes, 1 small store-Pharmacy, 1 equine, radiology room, 1 examination room, 1 riding tracks for lameness examination and 2 large paddocks.

We also have 2 stall- boxes enabled and equipped for isolation and quarantine.

The pharmacy store, the emergency laboratory and the cleaning and sterilization services are shared with the Small Animal Services.

In this service, students, preferably during the Practicum subject, perform different practices related to examination, diagnosis and medical and surgery treatment of a wide array of equine diseases with real equine cases. They also perform different practical sessions with bio-models such as trans-rectal examination training in equine cadaver, nerve blocks and major surgical interventions in the equine head and surgical techniques in equine limbs.

Practical outpatient sessions in equine clinic that are taught to students in 5th year, are carried out by associate professors, (practitioners working part-time in teaching), in equestrian centres or stud farms within the geographical environment of Zaragoza.

Four mares and two geldings are available at farm complex for teaching purposes in reproduction, propaedeutic and radiology and ultrasound practical sessions.

The small ruminant medical service (SCRUM)

SCRUM activity is carried out in the livestock facilities outside the hospital building. The objective of this service is based on advice and diagnostic support to all veterinarians of small ruminants; as well as in collaboration with companies, veterinarians, farms or institutions that serve to complement the practical training of students or that act as sponsors of teaching activities. This service has 20 internal students (undergraduate students of the 4th and 5th year), who perform guards in small groups of 24 hours in situ at the hospital.

A brief description of the premises for clinical activities in the VTH are shown on the table below.

Premises*	Type	Department/Unit	Surface(M ²)
Consulting room 1 – Internal Medicine 1	Clinical Teaching	Veterinary Hospital	18
Consulting room 2 – Internal Medicine 2 and exotic animals	Clinical Teaching	Veterinary Hospital	18
Consulting room 3 – General Surgery	Clinical Teaching	Veterinary Hospital	18
Consulting room 4 – Traumatology	Clinical Teaching	Veterinary Hospital	18
Consulting room 5 – Oncology and Ethology	Clinical Teaching	Veterinary Hospital	18
Consulting room 6 – Dermatology	Clinical Teaching	Veterinary Hospital	18
Consulting room 7 – Ophthalmology	Clinical Teaching	Veterinary Hospital	18
Consulting room 8 – Reproduction	Clinical Teaching	Veterinary Hospital	18
Consulting room 9 – Ultrasound	Clinical Teaching	Veterinary Hospital	18
Equine exploration room	Clinical Teaching	Veterinary Hospital	19
X-Ray room nº 1: Large Animals	Clinical Teaching	Veterinary Hospital	33
X-Ray room nº 2: small animals	Clinical Teaching	Veterinary Hospital	12
X-Ray room nº 3: small animals	Clinical Teaching	Veterinary Hospital	12
Negatoscopes and interpretation room	Clinical Teaching	Veterinary Hospital	30
Anaesthesia induction and pre-operating room	Clinical Teaching	Veterinary Hospital	25
Operating Theatre 5 – Equine	Clinical Teaching	Veterinary Hospital	56
Operating Theatre 6 –	Clinical Teaching	Veterinary Hospital	45
Operating Theatre 1 – Small Animals	Clinical Teaching	Veterinary Hospital	25
Operating Theatre 2 – Small Animals	Clinical Teaching	Veterinary Hospital	25
Operating Theatre 3 – Small Animals	Clinical Teaching	Veterinary Hospital	25
Operating Theatre 4 – Small Animals	Clinical Teaching	Veterinary Hospital	25
Hospitalization and recovery Services	Clinical Teaching	Veterinary Hospital	32
Infectious isolation room	Clinical Teaching	Veterinary Hospital	19
Anaesthesia induction Large Animals /Equine	Clinical Teaching	Veterinary Hospital	30
Analysis Laboratory room	Clinical Teaching	Veterinary Hospital	29
Pharmacy room	Clinical Teaching	Veterinary Hospital	22
Sterile material room	Clinical	Veterinary Hospital	22
clinical stuff store room	Clinical	Veterinary Hospital	14
clinical stuff store room	Clinical	Veterinary Hospital	11
Horse padock	Clinical Teaching	Veterinary Hospital	300
Stain Research Lab.	Research Lab	Aulario Building	40
Aquarium room	Research Lab	Veterinary Hospital	20
Cytology Lab.	Research Lab	Veterinary Hospital	20
Semen Research lab	Research Lab	Veterinary Hospital	20
General and medical Clinical Analysis Lab.	Research Lab	Veterinary Hospital	45
Lab. IIIb.- Bacteriology	Research Lab	Veterinary Hospital	18
Lab. IV – Molecular Biology	Research Lab	Veterinary Hospital	6
Ichthyology Lab	Research Lab	Veterinary Hospital	22

* Endowed with air conditioning

-) Diagnostic services including necropsy

The table down below describes the diagnostic services provided by the school and that give support to the companion animals clinic, horses and food animals. Most of the activities are clinical and are carried out within the companion animal integration subject, food animal integration and food animal practical.

The school has several agreements to accomplish computer tomography in companion animals and some specific biochemical chemistry analysis.

The Necropsy service depends on the Animal Pathology department and gives support to the VTH and Food Animals clinicians. Samples are received from private veterinary clinicians and used for teaching purposes at all times.

The procedures to be followed in the Necropsy room are for all animal species and students are involved under the supervision of the professor. Samples are taken from the animal organs and processed in the laboratory closed to the Necropsy room; if needed, these samples are sent to the Bacteriology, Virology or Parasitology Service.

	Nº	Area (m ²)	Spices
X-ray room	2	29,6	Companion animals
X-ray processing room	1	18,45	Companion animals
Dental radiography room	1	25,25	Companion animals
Ultrasonography room	1	17,15	Companion animals
Fluoroscopic surgery room	1	24,30	Companion animals
Endoscopy room	1	23,75	Companion animals
Electroretinography room	1	17,10	Companion animals
Radiology room	1	33,55	Horses and food animals
X-ray processing visualization room	1	18,45*	Horses and food animals
Ultrasonography room	1	57,85	Horses and food animals
Blood biochemistry lab	1	17,70	Multispecies
Chemotherapy room	1	8,75	Companion animals
Histology & Pathology lab	1	45,40	Multispecies
Parasitology & Parasitic Diseases lab	2	34	Multispecies
Virology & Immunology lab	1	15	Multispecies
Bacteriology lab	1	50	Multispecies
Infectious Diseases lab	1	15**	Multispecies
Necropsy room	1	145,25	Multispecies
Necropsy support lab	1	40,05	Multispecies
Necropsy lab preparation room	1	40,05***	Multispecies
TOTAL	22	603,15	

*M² shared with the X-ray processing room

**M² shared with the Virology & Immunology lab

***M² shared with the Necropsy support lab

-) FSQ and VPH

The FVZ Pilot Plant is equipped with unitary equipment for processing of foodstuffs including thermal treatment (retort, plate heat exchanger pasteurizer, tube in tube sterilizer, liquid chiller, nitrogen freezer, freezing tunnel, data logger for temperature control and cold and freezing chambers), extraction (solid/ liquid extraction system, ultrafiltration unit, crystallization unit), drying (freeze drying and tunnel dryer) and packaging (heat seal vacuum, modified atmosphere packaging and skin packaging).

There are also small complete food processing lines for dairy products (raw milk tank, mixing tank, yogurt system with double jacketed agitated vessels and incubator, homogenizer, cream separator, cheese production, butter production, ice cream production), meat products (meat cutter, meat grinder, fine meat mincer, stuffer, slicer, convention and smoking oven, meat injector, massaging bowl, boiling water cooking, molds), wine production (grapes destemmer, press and stainless steel tanks), olive oil production (mill, malaxer and centrifuge), bakery (mixer, fermentation chamber and oven). Other equipment for different food processing are available: pasta making single screw extruder, rotating screen drum washer for vegetables and multipurpose peeling and cutting, for apples.

Moreover, there are several laboratories: the microbiology laboratory (with incubators, microscopes, systems for automatic microbiological analysis, etc.), the physical and chemical analysis laboratory (for raw materials and products: pH- meter, spectrophotometer, and instruments for analysis of fat, protein, fiber, and for physical analysis: viscometer, texturometer and colorimeter) and the unit operation laboratory. Other facilities are the kitchen and sensory laboratory for evaluation of flavour, texture, colour, by using panellists. All the laboratories guarantee the complete evaluation of quality and safety of food products and food handling environment.

5th year students must do a Practicum in the Pilot Plant during 3 weeks to acquire hands on experience in food hygiene (prerequisites, self-control and HACCP) and food technology of foodstuffs of animal origin. Also, they do practical work in slaughterhouses, food industries, official laboratories, catering facilities and research Centres to get experience in inspection and control of foodstuffs of animal origin as well as in food technology and food quality control.

4.1.5. Description of the premises for:

-)Study and self-learning

There are two study areas, the library and a study room, located in the Aulario building and the Veterinary Clinical Hospital, respectively; with 772 m², and space for 357 students, endowed with Wi-Fi connection and air conditioning.

There are 2 computer rooms with 42 computers available for all students of the FVZ. The students can also make use of all seminar rooms under previous demand.

-)Catering

There is a central cafeteria located in the Aulario Building. It is open from 8.00 am to 8.00 pm with breakfast, snacks and sandwiches in the morning and a choice of various dishes for lunch (1.00 pm to 3.00 pm); and an outdoor terrace is also available. Moreover, buildings have automatic food and beverage vending machines.

-)Locker rooms

There are 87 lockers that students can use in the Aulario Building, close to the Necropsy room entrance, and a few more in the dressing room at the teaching farm and the VTH.

-)Accommodation for on call students

The School has 2 small apartments in the clinical area of small and large animals at the VTH, both fully equipped with beds, microwave and some furniture.

-) Leisure

One important aspect is the space for the Students' Union, there is a room with a meeting area and two more small rooms for different student's associations. There are 13 student associations in the School so students can practice different cultural, sport, and professional activities as well as developing other social aspects.

For practicing sport activities, students have to go to the main campus; as there is no sport area at the Veterinary School, however, the UNIZAR has agreements with city council sport centres nearby the Veterinary School.

4.1.6. Description of the vehicles used for:

There are three vehicles in the School:

- A small truck used for collecting big animals.
- A Nissan pickup, equipped with a small trailer in order to transport live and dead animals and a Van for the individual transportation of large animals, mainly horses and cows.
- A Renault Van with an equipped cage for the transport of live and dead animals.

Besides the ways of transportation mentioned above, the School also makes use of private transport for large animals, mainly for live ones.

For the transport of dead animals all vehicles have an official permit. However, the transport of dead animals by private owners is forbidden³ at national level, therefore the School has an agreement with the certified company of the Regional Government to bring dead animals to the establishment (mainly large animals). Drivers have special licensed to transport dead and live animals.

4.1.7. Description of the equipment used for

-) Teaching purposes

These teaching rooms are equipped with modern technical equipment, like PC, beamer, in parts with smart boards and intercommunications systems. Regarding the laboratory practices, departments have specific equipment and security material to carry out this kind of practices. The equipment used on research projects are often used for practices, above all in pre-clinic practices and basic subjects.

³ Animal Health and Protection Standards during Transportation, national legislation (Real Decreto 542/2016, de 25 de noviembre, sobre normas de sanidad y protección animal durante el transporte.)

-) Clinical services

LIST OF THE MOST IMPORTANT EQUIPMENT USED FOR CLINICAL SERVICES	Nº
Anaesthesia machine (one for small animals, one for large animals and two for equine)	8
Blood pressure equipment (ultrasound and oscillometric)	6
Breathing machine	1
Bronco-alveolar lavage Tube	1
Bronco-Alveolar catheter	1
Coulometer	1
Cryo-therapy Tool	1
Doppler Ultrasound equipment	4
Electric polishing lathe	1
Electric Scalpel	4
Electrocardiograph device	5
Electroretinograph	2
Ever flow oxygen concentrator	1
Gas analyser	1
Gonioprism	1
Infusion Pump	5
Metal Detector	1
Microscope	4
Nebul Inhaler with compressor	1
Neuro-stimulator	1
Ocular fundus camera	1
Ophthalmoscope (one portable)	8
Operating room lamp	6
Ophthalmology equipment for cataract surgery	1
Ostoscope	8
Phacoemulsifier for cataract surgery	1
photographic equipment, with Optilink Twain Image, Pentium PC with 17" Screen	1
Portable slit lamp for ophthalmology	1
Portable veterinary endoscopy	1
Pulsiometry Tube	1
Scales	3
Sterilizing Equipment	1
Surgical vacuum cleaner	4
TRC-50EX Retigrapher	1
Ventilator	3
Veterinary Dental X-ray equipment	1
Arthroscopy equipment	1
Vital Sing Monitor	4
Water pump for thermal mattresses	2
Surgery table for horses	1
Surgery table for small and exotic pets	4
Oxygenation cage	1
Hospital cage	25
Laminar flow chamber	1
Traumatology equipment	1
Adapted stock for rectal palpation in horse corpse	1
Horse stock	2
Induction and anaesthetic awakening box	1
Intelligent capillary vessel sealant	1
XR Equipment (one portable)	2
Vacuum cleaner (liquids and solids)	1
Laparoscopy equipment	3

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

The University of Zaragoza offers a centralized service which aims to maintain and update the current facilities in perfect conditions. This service is provided in three fundamental ways: preventive, corrective and legal maintenance, and in order to ensure proper attention to each of the Faculties, the University of Zaragoza has created a centralized structure (Central Service of maintenance), which allows a faster and personalized response thanks to a team of thirty-two members of the staff of the University. One of this campus is the Veterinary School, with a team that consists of five members of the staff (<https://serviciomantenimiento.unizar.es/campus-veterinaria>).

The programme for maintaining and upgrading the current facilities and equipment, or acquiring new ones depends on Deanery team of the School, Departments, Direction of Veterinary Clinic Hospital and in some aspects on the Experimental Animal Service; the General Assemblies or the School, Departments, Hospital, and the experimental animal Commission, which decides the priorities for upgrading the facilities or acquiring new equipment according the available budget. In some special conditions or big equipment or infrastructures, Departments and Faculty Direction ask for economical support to the Head of the Zaragoza University, using reserved funds for acquiring or making them.

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

Training about Security in laboratory practice and clinics for all students of Veterinary and Food Technology Science Degrees is organized by the Veterinary School and the Prevention and Occupational Risk Unit of the Zaragoza University (UPRL), which is held in the general conference room for new students at the beginning of the new academic course, which is compulsory for all students. The content and references can be found on the establishment web: <https://veterinaria.Unizar.es/estudiantes/formacion-prevencion-riesgos-y-seguridad#normas>.

All new students must sign a form that declares to be student's responsibility to observe and apply the preventive and safety measures in practice sessions and research works and to be aware that the breach of these mentioned norms implies the impossibility of accessing to the mentioned practice sessions or even expulsion. (Appendix 4). Likewise, new students also must sign a second form by which they declare that have been informed, at the time of enrolment, about the different aspects of the use of animal in practical teaching during their veterinary studies. (Appendix 5)

According to the article 9 of the Rules of Procedure of the Committee on safety and health at the University of Zaragoza, a Delegated Commission from the Veterinary Faculty for safety and health is created to collaborate with the Committee of the University on the development of their skills and the improvement of the transmitted information to the centres.

Students who are over 28 years old are required to take out an accident insurance. However, the Establishment recommends that all students (regardless of the age), have an accident insurance for their greater coverage, and the University of Zaragoza pays for all students a Liability Insurance, very important in all practices but mainly in clinics.

The School has an actuation plan in case of accident, details can be found on the Establishment web: <https://veterinaria.Unizar.es/prevencion/actuacionesaccidente>. Specific protocols to be followed in case of work accident, depending on the activity or causal agent, are available on the web: <http://uprl.Unizar.es/seguridad/accidentelaborales.html>.

The procedures and rules to follow in case of work accident inside the laboratories can be found at the entrance of the labs, at different points within the buildings.

Self-protection measures are ready to be taken at all buildings of the campus in case of evacuation, including procedure to follow in case of evacuation of animals Detailed information can be found on the web: <https://veterinaria.unizar.es/prevencion/planes-autoproteccion>.

In addition, safety equipment and protection measures that students must compulsory accomplish to perform practices are explained in detail in the teaching guidelines. Safety equipment for practical sessions is also recommended in the Faculty website, : <http://veterinaria.unizar.es/prevencion/equipamiento-seguridad-practicas>, as well as specific procedures for the Veterinary Faculty, <http://veterinaria.unizar.es/prevencion/protocolosespecificosveterinaria>

4.2. Comments

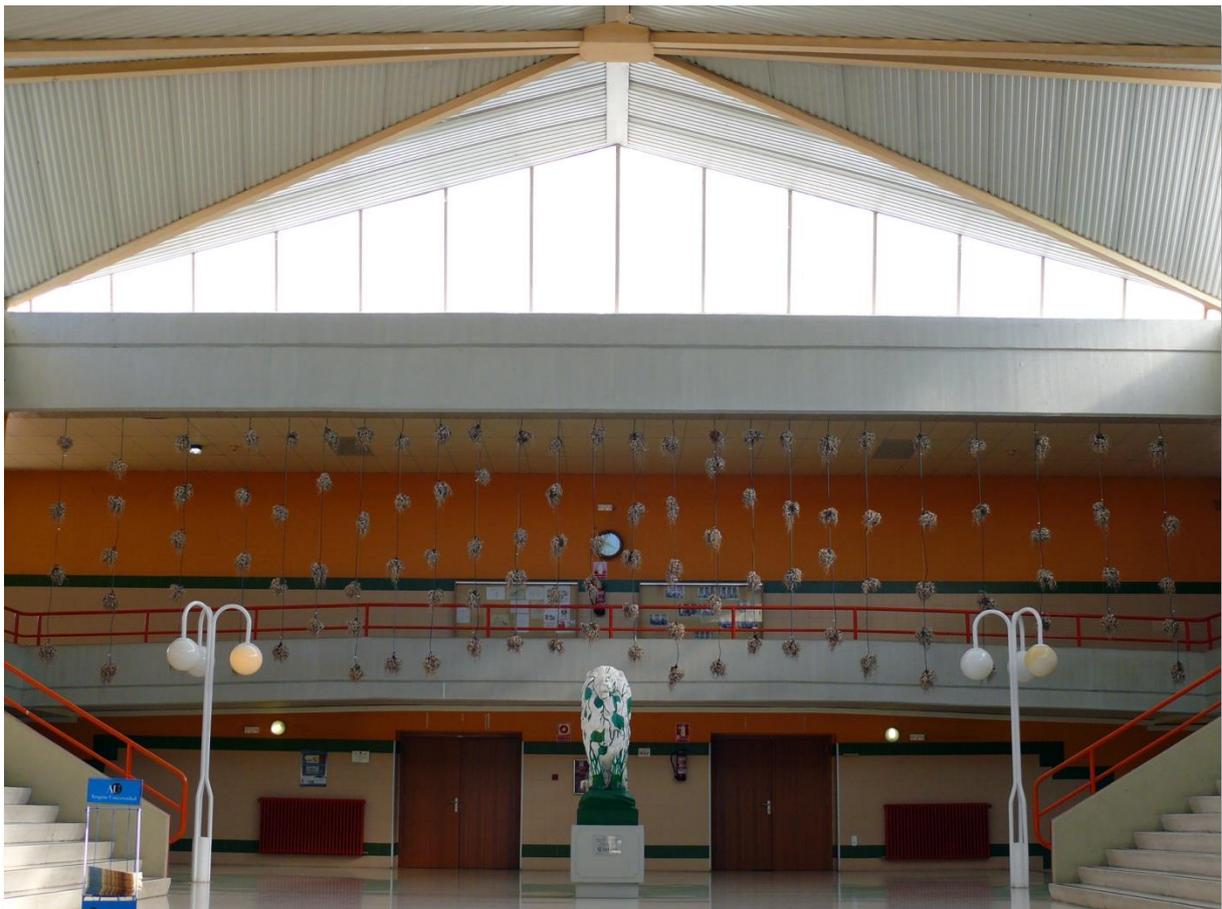
The VFZ has an important issue due to its location inside an urban area. Nowadays, the Faculty is more than 150 years old, and it has been on its current location since 1950. The city has grown so much that it has come up to the faculty and its surrounds, due to this fact it is not possible to build up more farms inside the campus, therefore the premises for housing are not enough and we are facing some problems to lodge animals. The Deanery has formally asked for another small campus for teaching farms outside Zaragoza, this request has been sent to the Head of the University of Zaragoza and the Regional Government.

On the other hand, so as to balance the aforementioned situation, food animal and clinical teaching practices are delivered by associated professors in farms that hold agreements with the school, renting private transport with driver for conveying students. Some clinical activities and preclinical teaching are accomplished intra-murally.

4.3. Suggestions of improvement

The latest budget cutbacks are a very important issue, the establishment budget should be increased in order to maintain and upgrade facilities and equipment, as well as acquire, at least, either a Magnetic Resonance or a Computer Topography equipment for the VTH.

One of the possible improvements, in addition to always increasing clinical cases, it is rotate and renew mares several times a year by means of donations of non-productive specimens, with fertility problems, pathologies, etc.





5.

Animal resources and Teaching Material of Animal Origin

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 use of animals and material of animal origin for teaching purposes has different sources:

- The Teaching farm and the Experimental Animal Research Service farm of the University of Zaragoza located in our campus, are mainly used for preclinical training on different animal species.
- The VTH provides patients for clinical teaching in pets, equine clinics, and small ruminants. The VTH has agreements with the professional veterinary college and official fares for private owners.
- Training on clinical and production of food animals are made outside the School, therefore, the School has Associate Professors for all food animal species, a wide net of transport for students, and agreements with farmers to visit their farms.
- The number of necropsies of all species is balanced and material of animal origin comes from Clinic Hospital and farms. The School has vehicles to transport the material and an agreement with the company of the local government that makes the collection of the material according to the current national legislation.

The use of models is increasing in some subjects, mainly in preclinical and clinical: in General Surgery (3rd year) student uses models for sutures and sheep model to learn basic protocol in anaesthesia and suture; in Reproduction (3rd year) a bovine model is used to practice rectal exploration, in companion animal integrated course (4th year) lameness simulator and horse limb taken from slaughterhouse are used for practicing local anaesthesia with diagnostic purposes; a very interesting model is used to practice rectal palpation in horses, for this purpose a death horse is used (only very old horses, and euthanasia has to be suggested by a horse clinician and the procedure approved by the ethical committee of the University of Zaragoza). The horse cadaver is standing in a stock and with two windows in every single flank and students can check in real time the horse organs.

All Clinicians implied in these activities have liability insurance and have joined to the professional veterinary college, and all students have accident and liability insurance. All practical training has the approval report for the protocol of the Ethical Committee of the Zaragoza University.

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.

In 2011 a new core curriculum was designed aiming at offering consistent clinical training more adapted to professional necessities. Some of the most relevant changes were made on the 4th and 5th year, with the integration of clinical and production aspects on the 4th year (companion animal integration and food animals' integration and the practicum in companion animals and food animals on the 5th year (see 3.1.).

The goal of the new curriculum is to ensure that students go through every single aspect (clinical and production) of every single animal species. In the 4th year and with some 3th year subjects, students acquire preclinical competences, in the 5th year, clinical teaching and mainly practical teaching including visits in slaughterhouses and FSQ.

The main idea of this design is that student studies every single aspect (clinical and production) in every animal species, instead of studying on with the system based in the study of organ system.

The 4th year integration subject and the 5th year practices in all animal species secures the balance between species, additionally, reinforcement on the species of the students' prefer is allowed.

The schedule is important to make compatible all the activities and thus the number of practices is higher than theoretical hours in the 5th year. The clinical activities are accomplished by a number of 5-7 students per group.

5.1.3. Description of the organization and management of the teaching farms and the involvement of students in its running.

The School has several animal units; some of them are in the animal experimental service. Our School has no extra-mural teaching farms, but it has agreements with other centres of the local government for practical teaching. Nevertheless, most of the pre clinic practical teaching is made in the units of the school quoted before.

There is a teaching farm that is just used for practical teaching in different animal species, however, small ruminant is the most developed model and students get involved in all clinical and management stuff.

Agreements with some research centres of the local government let our students carry out practical teaching in bovine, mainly in reproduction.

A summary of the animals' lodge in the units of the School and the practical teaching made with them is described in the table.

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

Area	Service	Specialty	Days a week	Opening hours
Small Animals	Medicine	General Medicine	5 days	10:00-14:00
		Dermatology	3 days	10:00-14:00
		Cardiology	1 day	10:00-13:00
		Neurology	2 days	10:00-14:00
		Nephrology and Urology	1 day	10:00-14:00
		Haematology/ Oncology	1 day	10:00-14:00
		Endocrinology	1 day	10:00-14:00
		Ophthalmology	2 days	10:00-14:00
		Reproduction	5 days	10:00-13:00
		Exotic animal	1 day	10:00-14:00
		Neurology	1 day	10:00-14:00
		Emergency	7 days	24 hours
		Ethology	1 day	16:00-20:00
	Surgery	General Surgery		10:00-14:00
		Pre-surgery Evaluation	By appointment	
		Ophthalmic surgery	By appointment	
		Neurosurgery	By appointment	
Orthopaedics/Traumatology		2 days	10:00-14:00	
Acupuncture		By appointment		
Dentistry	1 day	10:00-14:00		
Hospitalization and IC			7 days	24 hours
Large Animals	Equine Medicine		By appointment	24 hours
	Equine Surgery		By appointment	24 hours
	SCRUM		7 days	24 hours
Central Services	Anaesthesia	By appointment	By appointment	
		Emergencies	7 days	24 hours
	Diagnostic imaging		7 days	24 hours
	Biochemical Chemistry and Haematology		7 days	24 hours
	Pathology Lab		7 days	10:00-14:00
	Microbiology and Parasitology Lab		7 days	10:00-14:00
	Endoscopy		By appointment	
Laparoscopy		By appointment		

In the Small Animal Area, the Emergency Service is open 365 days per year, 24 hours a day. It is organised into several sections: emergency consultation, surgery and hospitalization/intensive care, thus if a new case enters through the VTH and either the General or the Surgery Service are closed it will be admitted at the Emergency Service. Cases are

attended by professors and residents, the latter always under the supervision of the former. Most of the professors are available 24 hours on call to discuss emergency protocols.

In the Large Animal Area activities are divided into 2 main areas: the Surgery and Medicine equine service and the Small ruminant medical service (SCRUM).

The equine medicine and surgery service is formed by two veterinary surgeons and an veterinary for anaesthesia and critical care and a person in charge of performing various functions such as storage, cleaning stalls, etc. An ambulatory equine practitioner (and associate professor) collaborates with the service staff in some elective or emergencies cases.

The Surgery and Medicine equine service provides a 24-hour a day, year round, continuous care equine patient and emergency service, with interns on site and a surgical team on call.

In addition to this staff, this service has 18 internal students (undergraduate students of the 4th and 5th year), who perform guards in small groups of 24 hours in situ at the hospital. Interns actively participate in all clinical duties in the equine clinical service of the HCV (medicine, surgery, anaesthesia, emergencies and hospitalization).

The equine medicine and surgery service provides 24-hours/365-days continuous care equine patients and emergency service), with veterinary surgeons and/or interns on site with a clinician on call who is in charge of taking the emergency phone calls. This service is considered as a "reference centre" of a wide area of the country that includes Aragón and the bordering autonomous communities. All cases are referred to the hospital by referring veterinarians. The veteran student of the internal group that receives the case is in charge of carrying out the medical follow-up of the patient and also, making the report for the owner and the referring veterinarian, once the horse has been discharged.

All the work of the internal students is supervised by the veterinarians of the service.

In this service, students, preferably during the Practicum subject, perform different practices related to the examination, diagnosis, medical and surgery treatment of a wide array of equine diseases with real equine cases. They also perform different practical sessions with bio-models.

Practical outpatient sessions in equine clinic that are taught to students in 5th year, are carried out by associate professors, (practitioners working part-time in teaching), in equestrian centres or stud farms within the geographical environment of Zaragoza.

The Clinical Ruminant Service is open 24 hours a day and just attends referral cases sent by private food animal veterinary clinicians. The Service is coordinated by food animal professors, residents and internal students, and a final report with the diagnosis and therapeutic and preventive measures is sent to the referral clinician. This is a diagnostic service, and in order to apply measures in the farm of origin, animals are euthanized in the school and sent to the post mortem room for macroscopic, histopathological and microbiological investigation. Food animal Integration and Practicum students are involved on the practical teaching of all cases. The Service also receives culling animals from collaborating farms in order to study their main pathologies and telematic queries from national and international veterinary clinicians.

Furthermore, 4th and 5th year students carry out internships in sheep and goat farms throughout the academic year. During lambing time and for several weeks students go to farms and help farmers with daily tasks as attention of new-born lambs and their mothers. Likewise, if animals show pathologies, students, with the veterinarian farm help, will be in charge of offering the necessary treatments to lambs and ewes.

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

Anatomy

All cadavers dissected by students are stored in a saline solution. Single formalin-fixed cadavers of small animals (preferably dog) are used for studying in dissection courses or demonstration during anatomy and embryology lectures.

In the dissection room students also practice and study with osteological material studied, a long series of structures and details are numerically indicated and the student must identify.

Small ruminants and chicken are used to demonstrate in vivo situs of the digestive tract.

All formalin-fixed specimens are rinsed several times with water until the fixative is removed before students come into contact with the samples.

From these, an average of 24 cadavers of companion animals are used per year in practical classes and assessments of Anatomy I and II.

Pathology

There are three sources to obtain animal cadavers:

- Final production small ruminants and pigs and poultry found death in farm in order to learn the necropsy technique and methodology
- Cadavers of companion animals and horses donated by HCV clients for teaching and scientific purposes
- Cadavers donated by private veterinary clinics and from external sources (e.g. veterinary practitioners, owners)

Cadavers are either fresh (shortly after euthanasia or death), cooled or frozen and thawed. After necropsies, interesting organs / tissues / cases were either cooled (for short term use), frozen (for long term storage) or fixed in 10% neutral buffered formalin (for long term storage).

Additional sources of material for the teaching of necropsies and pathological anatomy, includes slaughterhouse material:

- Porcine: organs from slaughtered animals (lungs, liver and extremities)
- Cattle, sheep and goats: (lungs, liver and extremities, costal pieces)
- Horses: horses' liver and lung

From these:

- An average of 228 companion animal cadavers is used per year in practical classes and assessments of General Pathology; Anatomical Pathology and Practicum.
- An average of 380 ruminant cadavers is used per year in practical classes and assessments of General Pathology; Anatomical Pathology and Practicum.
- An average of 100 porcine cadavers is used per year in practical classes and assessments of General Pathology; Anatomical Pathology and Practicum.
- An average of 20 horse cadavers is used per year in practical classes and assessments of General Pathology; Anatomical Pathology and Practicum.
- An average of 300 poultry cadavers is used per year in practical classes and assessments of General Pathology; Anatomical Pathology and Practicum.
- An average of 40 exotic animal cadavers is used per year in practical classes and assessments of General Pathology; Anatomical Pathology and Practicum.

Carcasses, organs and tissue samples of necropsied animals are stored separately in refrigerators until removed by the local rendering plant. The material is separated and disposed once or twice a week.

5.1.6. Description of the group size for the different types of clinical training.

The size of the groups in the veterinary degree is marked by a stipulated number in the database that is used exclusively for this degree. The necessary requirements for the organization of practical spaces as well as combining the different subjects of which the students are enrolled enforces that groups of intra and extra-murally practices are 12 groups subdivided up to 24 subgroups

5.1.7. Description of the hands-on involvement of students in clinical procedures in the different species.

The first student contact with animals takes place during the 1st year, in Ethnology and Bioethics, in which restraint techniques for animals are taught respecting their welfare. Nevertheless, the hands-on involvement of students in clinical procedures begins in 3rd year, and later in 4th and 5th year.

3rd year: In Imaging Diagnostic students learn to manipulate dogs, cats and horses, to take radiography and to perform an ultrasonography exam, in propaedeutic they learn to explore and take clinical samples in different domestic animal species, and in general surgery they learn suture technics and general anaesthesiology using sheep as model. In reproduction students learn how to use the anaesthesia to perform obstetric exams. In Animal Pathology students learn to perform necropsies in different animal species, to identify the main organ lesions by using animal material taken from slaughterhouse, to perform fine needle aspiration and punch biopsies, and write necropsy reports.

4th year: The intra-mural and extra-mural practical teaching begins. The intra-mural activity is performed in the VTH (dogs, cats, exotic and equine) and in the teaching unit (sheep, pig, exotic and equine), and it includes hands-on routine activities as clinical examinations, collection of biological samples, comparative diagnostics, preparation and administration of medication, vital signs monitoring, registry QVET of clinical signs, surgeries attendance and report

writing; in horses students learn reproductive techniques in mare, regional anaesthesia in limbs using models with slaughterhouse material, and to perform a whole exam in a visit of purchase. The extra-mural activity is organized in small groups of students with the associated professor at farms of different food animal species, learning the basis of clinical and production aspects. Most activities are included in the integration subject of companion animals and food animals.

5th year: clinical and production aspects are included in the practicum of companion and food animal, students will intensify basic aspects learned in 4th year. Intra-mural and extra-mural activities are performed.

Intra-mural: activities are held in the Veterinary Clinic Hospital (dog, cat, exotic, equine, ruminant) and teaching unit (ruminant, equine). The student becomes involved with the management of the daily medical, surgical, intensive care, anaesthesia, emergency cases and nursing of hospitalized patients. This includes client communication, medical history, case report writing, clinical examination, blood sampling, developing a diagnostic plan and a treatment plan and documentation. Students are trained in reproductive and obstetrical treatments including castration methods. Depending on the case load, students will be involved in euthanasia cases and the preceding decision making. All activities are organized in small groups, 24 groups or 48 groups, depending on the activity and they rotate through the different services, one week each service.

Extra-mural: Hands-on involvement of students in food animal during practicum is acquired with associated professors in farms outside the School, except some activities with small ruminant (described in 5.1.4). Students are divided in small groups, and are taken by minibus to the farm. The School has an associated professor for all food animal species and agreements with farmers. The hands-on involvement of students aims to improve their knowledge in all aspects of health herd, animal husbandry and breeding, and finally, the professor assesses the competences acquired by the student

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 in its management.

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

The FVZ 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 by teachers in the farm books.

5.1.9. 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 Ethics Committee for Animal Experiments (<http://cea.Unizar.es/>) and, finally authorized by the competent authority (Dirección General de Alimentación y Fomento Agroalimentario, Gobierno de Aragón).

Ethics Committee for Animal Experiments of the University has been set up to follow the basic standards for the protection and welfare of animals used for experimental and other scientific purposes, including teaching. Its President are the University Research Vice-Rector. Evaluation includes:

- a) Teaching and research procedures with animals.
- b) Teaching activities with animals, samples or material of animal origin, including cadavers, excluded from the application of the Directive.
- c) Veterinary clinical trials or use of owned animals with scientific purposes.

The project evaluation is performed with a degree of detail appropriate for the type of project and verify that the project meets the following criteria:

- a) the project is justified from a scientific or educational point of view or required by law;
- b) the purposes of the project justify the use of animals (harm-benefit analysis)
- c) the project is designed so as to enable procedures to be carried out in the most humane and environmentally sensitive manner possible. Approval requires the application of the 3R concept of Replacement by alternative methods, Reduction in the number of animals employed and Refinement of the procedures employed. Currently, most teaching clinical procedures are performed at the Veterinary Teaching Hospital with client-owned patients, other activities use animal models or dummies, cadavers, isolated organs and body regions and biological material from

local abattoirs, private veterinarians or commercial farms. So, the number of practical activities with experimental animals has been significantly reduced.

In addition, dogs and horses have an individual history file which follows the animal as long as it is kept for teaching purposes. The file covers, among other things, projects/procedures in which they have been used.

The animal facilities of the establishment are under the institution administrative responsibilities. All facilities have sufficient on-site staff, adequately educated and trained to perform any of the functions (carrying out procedures, designing and supervising procedures, taking care of killing animals). Currently, our Establishment has 2 facilities officially authorized for animal research and teaching:

(1) Animal Research Service (<http://sai.Unizar.es/experimentacion-animal/index>, ES 50 297 0012 006).

(2) Research Centre for Transmissible Spongiform Encephalopathy and Emerging Animal Diseases (<http://centroeets.Unizar.es/centro/>).

Any student or staff (academic and support) can communicate any complaint or suggestion related with animal welfare issues to the Ethics Committee (complaint and suggestion mailbox: <http://cea.Unizar.es/sugerencias.html>).

On 16 September 2016, University of Zaragoza has joined the [Agreement on Openness on Animal Research](#), promoted from the Federation of Scientific Societies in Spain (COSCE), with the collaboration of the European Association of Research Animals (EARA). Agreement commits its signatories to be clear about why and how animals are used for research and teaching purposes, which includes publishing a statement on their website setting out their policy on using animals (<http://cea.Unizar.es/TRANSPARENCIA/index.htm>).

Finally, another compulsory rule for animal practices is to have the good ethical practice certificate issued by the Ethical committee of the Zaragoza University. So, all practices in which some animal is used in the Veterinary subjects of the core curriculum have this certificate. More information about this aspect can be consulted in the web of Ethical Committee of the Zaragoza University: <http://cea.Unizar.es/>.

5.1.10. Description of how procedures 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 numbers of animals used in preclinical training and in the different subjects is decided by Departments and the budget, respectively. An important aspect is that the number has to be enough to comply with the Spanish transposition of the Directive 2010/63/EU, the Protection of Animals; in our school all practical activities must have and ethical certificate issued by the Ethical Committee of Unizar.

The number of animals used in clinical training depends on the clinical cases visited in the VTH, care of pets and equine and on the number of animals of the visited farms with agreements with the School in case of food animals. All these activities must have the mentioned ethical certificated too.

Both preclinical and clinical practical activities have to be programmed at the teaching programmed on the basis of the content of syllabus and, therefore, be approved by the Assemblies of the School Departments, the Quality Assurance Committee and the Degree Assessment Committee.

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

Species	2019	2018	2017	Mean
Cattle	*	*	*	*
Small ruminants	*	*	*	*
Pigs	*	*	*	*
Companion animals	32	32	32	32
Equine	*	*	*	*
Poultry & rabbits	*	*	*	*
Exotic pets	*	*	*	*

*For compared anatomy, organs and bones from the Museum and Department of Osteology and Organs from cavities are used.

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

Species	2019	2018	2017	Mean
Cattle	15	10	13	12,6
Small ruminants*	150	300	57	169
Pigs	9	9	9	9
Companion animals	9	9	9	9
Equine	8	8	8	8
Poultry	100	100	98	100
Rabbits**	70	70	69	70
Exotic pets	50	50	50	50
Others (Trout)	100	100	100	100

*Throughout the whole academic year, cases from the Small Ruminants Clinical Services are used (300 cases approx.)

**For Animal Production and Food Science practices two broiler breeding are used so in total 7.200 broilers (3.600 for each breeding)

Table 5.1.2. bis. Animals distributed by subjects

Subject	Small Ruminants	Horses	Cows	Pigs	Rabbits	Dogs	Poultry	Various			
								Turtle	Pigeon	Trout	Rat and mice
Anatomy						17 cadavers					
Ethnology	8	1	2 calves				18 hens				
Biochemistry	9										
Physiology						1					
PG-Prope I/II	25	5	4			5					
Reproduction	15										
Diagnostic Imaging		2				3					
Toxicology											
Poultry and Rabbits Integration:					85 male 16 female 140 typo	7200/ 600 chickens					
Aquatic and Exotic Animals Integration:								20	30	100	
Equine Integration:		5/6 cadaver									
Ruminant Integration:	50		6								
Porcine Integration:				8							
Bee Production and Health	Visit to Beehive (>1000 bees)										
Wildlife	Visit to Aquarium										
Laboratory Animal Science I & II					9						10

Table 5.1.2. bis. Animals distributed by practices

Species	Nº of animals	Practice
Dogs	7	Pathology Department
Rabbits	12	Rabbit handling and breeding
	4	Handling and restraint basic technique for small experimental animals
	4	Substance administration and sample obtainment
	49	Drugs administration
Ovine	300	Pathology Department
	2	Minimally-invasive surgery Master
	7	Sheep necropsy practices
Swine	31	Minimally-invasive surgery Master
	9	Seminal extraction in boar and Diagnosis of gestation in sows
Equine	6	Pathology Department
Broilers	3600+3600=7200	Animal Production and Food Science
Pigeons	20	Pathology Department: exotic pets
Tortoises	20	Pathology Department: exotic pets
Lying Hen	49	Animal Production and Food Science: well-being assessment
Poultry	61	Pathology Department
Poultry	14	Animal Production and Food Science

Table 5.1.3. Number of patients seen intra-murally

Species	2019	2018	2017	Mean
Cattle	6	6	6	6
Small ruminants	316	268	500	360
Pigs	9	9	9	9
Companion animals	11.109	13.260	14.318	12.895
Equine	169	266	147	194
Poultry & rabbits	7.200	7.200	8.072	7490
Exotic pets	230	230	232	230

Table 5.1.4. Number of patients seen extra-murally

Species	2019	2018	2017	Mean
Cattle	5.000	5.000	4.144	4.714
Small ruminants	4.500	4.500	4.440	4.480
Pigs	3.000	3.000	2.960	3.000
Companion animals	*	*	*	*
Equine	270	265	290	275
Poultry & rabbits	4.000	4.000	4.000	4.000
Exotic pets	126	130	147	134

*All intra-murally

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

Species	2019	2018	2017	Mean
Cattle	100	100	100	100
Small ruminants	3	3	3	3
Pigs	100	100	100	100
Companion animals	80	80	80	80
Equine	50	45	50	48
Poultry & rabbits	0	0	0	0
Exotic pets	95	95	95	95

*Most food-producing animals attended at the VTH have been previously attended by the Associate Teachers working in the Mobile Clinic, who have transferred directly the cases, when necessary

Table 5.1.6. Cadavers used in necropsy

Species	2019	2018	2017	Mean
Cattle	20	22	26	22
Small ruminants	310	366	362	346
Pigs	130	146	106	127
Companion animals	211	239	234	228
Equine	11	11	21	14
Poultry & rabbits	410	293	338	347
Exotic pets	30	20	20	23
Others (Titi monkey, Badger)			2	2

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

Species	2019	2018	2017	Mean
Cattle	2	2	2	2
Small ruminants	2	2	2	2
Pigs	2	2	2	2
Poultry	3	3	3	3
Rabbits	3	3	3	3

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

Species	2019	2018	2017	Mean
Ruminant's slaughterhouses	4	4	4	4
Pig's slaughterhouses	4	4	4	4
Poultry slaughterhouses	4	4	4	4

5.2. Comments

There has been a significant increase of the case load over the last years, however, there is still room for improvement mainly in small animals, equine and food animals.

5.3. Suggestions of improvement

The establishment aims to maintain and even to increase the number of agreements with private clinics and farms and to recruit more associate teachers with long lasting contracts. Likewise, it aims to increase or value the use of models in teaching, both mannequins and simulators, which allow the acquisition of several skills.

In order to increase the casuistry of horses in the VTH, it would be very convenient to provide this service with some equipment like lameness locator, gastroscope, dynamic overground endoscopy, direct digital radiology, transendoscopic laser and shockwave therapy. In addition to the afore mentioned medium size equipment, there are other large equipment necessary for our hospital like magnetic resonance image (for standing or anaesthetised horses), computerised axial tomography for standing horses (head) or anaesthetised horses (distal limbs) and scintigraphy.



6.

Learning Resources

6. LEARNING RESOURCES

6.1. Factual information

6.1.1. Description of the main library of the Establishment

The library of FVZ (BibVetez) belongs to the University of Zaragoza library network, BUZ, which is a transversal service whose mission is to support teaching and research at Unizar. The general procedures, guidelines and operation rules are coordinated from the technical direction of the BUZ and all the network libraries (21 in total) share a management model based on quality and excellence. This management model has been recognized since 2011 by the European Accreditation EFQM +400, which it has been renewed every two years and is currently in force until March 2021.

Staff and qualifications:	1 head librarian, 2 graduate librarians; 5 library assistants and 1 further staff member. The Library staff keeps its relevant technology, organization and library and information knowledge up-to-date through regular training.
Opening hours and days:	Monday-Friday, 8:15 am to 9:15 pm.
Annual budget	8.000€
Facilities:	Aulario Building; 820 m ² including a large reading room, an office for study groups where the consultation and the multimedia area are located; Library deposit; 234 seats.
Equipment:	7 desktop computers, 2 DVD; 1 printer; 1 projector.
Number of veterinary books and periodicals:	25.042 bibliographic records, 2.200 periodical titles from which 127 current subscription. The bibliography recommended by the academic staff in the Teaching Guidelines is covered and available (above 95%)
Number of veterinary e-books and e-periodicals:	91.658 e-books in the BUZ, of which a 25% are related to veterinary studies; access to 29.356 e-periodicals, of which a 20% are related to veterinary studies. All Unizar members have access to electronic resources from anywhere 24/7.

6.1.2. Description of the subsidiary libraries

The FVZ has subsidiary libraries at its different departments. Journals and Books present in these libraries are described in the catalogue of the UNIZAR library (<http://roble.unizar.es>). Academic staff and students have access upon previous request.

Department	Number of books
Agricultural Sciences and Natural Environment Department	5.876
Pharmacology and Physiology Department	761
Anatomy, Embryology and Animal Genetics Department	1.248
Animal Production and Food Science Department	4.208
Animal Pathology Department	1.228

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

Students can access all computer rooms at all university faculties and campuses. Specifically at the FVZ there are 136 Desktop-PCs for student use and practical teaching in different rooms and buildings of the Campus:

- 5 computer rooms for teaching (240 sq. m.) with 94 PC computers (Microsoft Windows) scattered in clusters of 8-25 (8/15/19/25/25) that are usually used as individual computer stations. In addition, the furniture allows to work in pairs with the double number of students if necessary. 75% of computers are less than 4 years old.
- 1 computer room has alternative use for self-study of English (8 PC computers).
- 2 computer rooms for free student use (131 sq. m.) with 38 PC computers (Microsoft Windows).
- 7 computers in the library (free use and for Internet and database searches).

Further, 2 tablets are also available at the CTA Pilot Plant to access the QR labelling of all machines (information on machine operation, practice execution, safety, etc.). Currently most students access through their smartphones.

Basic software (Microsoft package and other open source software) is installed on computers, as well as statistical software, such as IBM SPSS® (Statistical Package for Social Sciences) and R, and any other computer programs required for the regular development of subjects. All software used in FVZ is whether open source or commercial licenses (see 6.1.7).

All classrooms for theoretical teaching are equipped with computer and multimedia equipment, video projector and projector screen, as well as meeting rooms, the conference room and the auditorium.

In addition, FVZ maintains an in-house developed management platform (an IT system that was integrated into Drupal) with restricted access to students ("Student's Personal Area") which provides access to important dates and information and grants access to self service functions provided for students (personalized schedules, customized practice groups, enrolled subjects...). The infrastructure for server and storage depends on the central IT services (hardware, database and backup).

The institutional virtual campus of UNIZAR, so called "Anillo Digital Docente", ADD (<http://add.Unizar.es>) is the official platform for virtual teaching. Actually, ADD include an e-learning platform (MOODLE, <https://moodle.Unizar.es>), an Open Course platform (Open Course Ware, OCW, <http://ocw.Unizar.es>) and an electronic portfolio (MAHARA, <https://mahara.Unizar.es>). This learning environment is also accessible in fifteen languages and from mobile devices. The functionalities of ADD are supplemented by several on-line based resources and ICT tools (Information and Communications Technology tools) (see Chapter 6.1.4).

FVZ also has its own Audio-visual Service Unit with great dedication to educational video production, audio-visual presentations and corporate production (a highly qualified full-time specialist Graduated in communication, visual arts and cinematography; photography, film camera and TV specialist).

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

Most of the Degree subjects are included in MOODLE platform under a e-learning methodology. In the last academic year 2018-2019, there were available 55 combined courses for the FVZ, <https://moodle.unizar.es/add/course/index.php?categoryid=4525>. These courses support classical teaching methods and, in general, include manuscripts and PowerPoint presentations on lectures and assessments. Some administrative or academic organization courses, such as the Mentoring Program, are also hosted by MOODLE. Further postgraduate studies are also included in the Virtual Campus.

Eleven courses are specifically offered for veterinary students on the OCW platform, <http://ocw.Unizar.es/ocw/>, which represents 33% of the total UNIZAR courses. (Appendix 6). Outstanding examples of this teaching format are the anatomy and mathematics courses which have received national and international awards for their quality and innovation (MECD- Universia, Spain and Open Education Awards for Excellence, Open Education Consortium). In addition, some teachers use other free platforms like Coursesites by Blackboard or run a website or use their own virtual platform for teaching such as ALP4eb (Advanced Learning Platform for Epidemiology and Biostatistics), (2011 Santander Award <https://catbs.Unizar.es/articulos/premiados-2011>)

FVZ also offers several introductory course for new students in basic subjects as *Basic Sciences for Veterinary* (Physics, Chemistry and Mathematics, b-learning in Moodle) and *Mathematics for first university courses* (Mathematics, on-line in OCW).

The library has also developed several online courses in Moodle, such as Computer and information skills on use of bibliographic databases (PubMed, Web of Science, Scopus), citation tools (RefWorks, Zotero, Mendeley...) and fundamentals to write an academic work, among others. Currently, the library offers two new courses on *Digital competence* and *Guide of tools and patterns for a good Undergraduate Dissertation*. Library staff continues an advance training in postgraduate programs.

In addition, the student has access to other courses and open resources offered by the university such as Google Apps for Education (<https://sicuz.Unizar.es/correo-y-colaboracion/espacios-web-colaborativos-inicio/espacios-web-colaborativos-gafe-inicio>), Moodle Open Courses, Digital repository of the University of Zaragoza (ZAGUAN, <https://zaguan.unizar.es/>), Massive Open Online Courses, MOOC general courses managed by MIRIADAX platform (<https://miriadax.net/web/universidad-de-zaragoza/inicio>). From the 2019-20 academic year, students in the last year have access to UNIVERSA online training courses for skills training, entrepreneurship and job search. ICT tools such UNICHEK to detect plagiarism are available for the assessment of FYP (with integration in Moodle).

FVZ offers many digital media tools so that the curriculum may be complemented.

- The [Digital and Multimedia Service Unit](#) produces and edits video recordings for scientific dissemination and supports academic staff. The FVZ video collection is accessible by YouTube channel (32 playlist, 232 videos until 2018 on anatomy, pathology, surgery, genetics, etc. See Appendix 7).
- Several [videos](#) are also being produced specifically by the academic staff (e.g. PsicoVetPill collection, Creation and use of audio-visual material as a tool for improving communication skills in the veterinary clinic, 2018 Santander Award <https://catbs.Unizar.es/articulos/premiados-xi-edicion-premio-santander-2018>).
- [Video tutorials](#) are also being made for online distribution with Chroma Key to create virtual backgrounds.
- The Faculty has [Educlick®](#), an audience response system to intensify classroom and evaluation (96 clickers and 3 receiving bases -one per classroom-), some teachers also use other similar systems with students' smartphones, such as Kahoot!
- Many teachers have also developed their own computer tools to support teaching. It should be noted that includes a simulator for the diagnosis of lameness in horses (2016 Santander Award <https://catbs.Unizar.es/articulos/premiados-2016-2>).

The use of the library as a teaching support tool is essential. The FVZ library has subscriptions to greatly specialized electronic resources that can be checked at [AlcorZe](#) Discovery tool , an online tool that optimizes searches as interrogating simultaneously all BUZ electronic resources (Web of science, Scopus, PubMed, Agriculture, FishBase...). These resources can be looked up off campus due to the EzProxy usefulness and they have explanatory help guides

Additionally, the library offers the following electronic channels for information and consultation:

- [Library Catalogue](#): for books and journal searches, in any format
- [BR database](#): for consulting
- [Videos and online tutorials on YouTube channel](#): with information of the library and its resources.
- [UNIZAR Library chat](#): to provide information through the Hangout tool in real time
- [Help Desk](#): through an online form, users can communicate their doubts, request specialized reference, submit suggestions of improvement...etc.

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

Wi-Fi coverage is all over the campus. There are two wireless networks: EDUROAM and WIUZ. Students and staff have free access to all electronic resources by Wireless Internet connection through both networks and using the Campus user account on personal computers or mobile devices. Due to the participation to Eduroam students and staff can be authenticated against services from other academic institutions as well external academic guest can access to our network. Wi-Fi access for guests is also possible through a ticket system.

Outside UNIZAR, students can access learning material via internet. Remote access to some Internet resources (including electronic library resources, FTP (File Transfer Protocol) connection and private administrative resources) is also provided through easy-to-use high speed Virtual Private Network (VPN). The library also has Ez-proxy (Allows restricted access for all users by IP address authentication). SICUZ provides support and electronic guidebooks on the website to help students and staff with the configuration of wireless communication in their mobile devices and VPN access.

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

At the beginning of the first academic year, the FVZ organizes a Welcome Day for new students. Among other information, a brief explanation on how to access the Virtual Campus to set up their personal passwords for Google Apps for Education and how to manage the institutional email address and service accounts (such as library, VPN or Wi-Fi) is provided. This information is also communicated during the Mentoring Program for new students. Later, the tools and ADD courses are being presented to the students by teaching staff or by links integrated in the learning material.

The library goes along with students throughout their whole learning process for accessing and using IT infrastructure. The introduction into the library starts during the welcome week of the first year and later on, along the Degree and Master studies, courses and tutorials are imparted to guide students about search, selection, assessment and ethic use of information ([AlcorZe](#) Discovery Tool, [Refwoks](#) bibliographic manager, tools guide for a proper Undergraduate Dissertation). The use of [bibliographic managers](#), like [Refwoks](#), [Mendeley](#), [Zotero](#), etc., is empowered, and practices in

user training courses are included in order to ease their use. In addition, there are call-in sessions available to students, researchers, clinicians and all faculty members during the year for learning these tools.

The library is also engaged in training students in Digital Competence (DigCop or e-skills) through the *Basic Digital Competence* course. It specially focuses on the 5 areas of Digital Competence: Information and data literacy, Communication and collaboration, Digital content creation, Safety and Problem solving. This course is included in a 1st year subject in collaboration with the academic staff.

Fifth year Degree students perform a virtual course, through the Moodle teaching / learning platform, offered by the Library of the University of Zaragoza, which aims to be a guide for students in the process of realization of the Undergraduate Dissertation, that is, how to search for the required information, evaluate it, manage it and communicate it correctly.

The course has a support service to answer questions, attended by librarians which is open throughout all the academic year.

The structure of the course corresponds to the logical sequence of the steps to be performed in the Undergraduate Dissertation:

Step 1: Know the regulations that regulate your Undergraduate Dissertation

Step 2: Choose the theme

Step 3: Plan and search for information

Step 4: Evaluate the information found

Step 5: Use the information ethically

Step 6: Citation style and bibliographic reference manager

Step 7: Compose

Step 8: Once the work is finished

Step 9: To finish

For the PhD students, library offers courses at the School of Doctoral on how to manage specialized database for researchers and the publishing of researching works. These resources are available on the [Researcher's Portal](#).

The University offers a teaching qualification program available for new professors (four years maximum in teaching, <https://ice.unizar.es/profesorado-novel>) to learn about computer resources, virtual campus, etc. In addition, general courses are also offered to all teachers on the use of the virtual campus, e-learning, teaching methodologies and didactics, updating in ICT tools and digital competences, within the standard training programs and summer courses. In addition, two events are offered, once a year, with conferences and workshops on specific topics in the field of teaching and learning with TIC (<http://innovaciondocente.unizar.es/> , <https://catbs.unizar.es/articulos/x-jornada-de-buenas-practicas-en-la-docencia-universitaria-con-apoyo-de-tic>). In these events, teachers have the opportunity to share the results of their teaching innovation projects developed with students during the course (See a list of these projects developed by FVZ teachers in Appendix 8).

In addition, a new section in the website of the Library of the University of Zaragoza (BUZ) has been created: the Teacher's Portal. It aims to bring together, in a single space of our website, services, resources and tools of the library that can help to teach. The design of this portal is in tune with other portals of the library website (Student Portal and BUZ Portal for research assistance): it is structured in six main sections that collect information from the library to which other information has been added and complementary links that may be of interest.

Finally, the library also has a MOOC about intellectual property, in collaboration with the academic staff of the UNIZAR.

Any important notice or change in access procedures to learning resources is communicated in different ways like traditional signage, e-mail or social networking websites. Since 2015 FVZ have your own [social media profiles](#) (Twitter, Facebook, YouTube, LinkedIn). As of 2019 instant messaging is also available (WhatsApp service). Students and staff also receive in their e-mail a daily Newsletter from UNIZAR and weekly one specific from FVZ. Both are also available on the web.

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.

Information resources available at the library are linked and developed within the framework of the subjects taught at the FVZ.

Selection criteria for the purchase of books, are annually defined by the academic staff, who review and update the recommended bibliography for subjects. The FVZ and the library commit to provide students all the recommended basic bibliography. The purchasing of books is managed by the FVZ library from the budget allocated for teaching. Once the purchase is done, library staff brings them into the catalogue and made them available to users. All information regarding the recommended bibliography is available on the teaching guidelines of every subject and [on the library database](#) where any news or changes are updated. Suggestions for purchase from the academic staff and students are also accepted by filling the proper [form](#). More specialized books are bought for Departments, that once they have been catalogued, are deposited at the appropriate subsidiary library

Journals, data bases and others electronic resources are acquired by the Library Service Unit of UNIZAR, covered by a centralized budget from BUZ. The aforementioned Service Unit manages registration, cancellations and renewals considering use/cost criteria of resources in order to guarantee its efficiency and sustainability. Decisions are communicated to the Library Users Committee, a collegiate body from the FVZ, which aims to manage everything related to the library and its resources. The Users Committee's Chairman is the Vice-Dean for Technology, Teaching Innovation and Digital Culture, it has a representation of the different Establishment's Departments and the head of the library acts as the Secretary.

All the above mentioned informational assets are available on the library catalogue and the AlcorZe Discovery tool. New available books are advertised on the [FVZ Library Newsletter](#) and exhibitors at the library entrance.

It is up to the academic staff to provide specific e-learning material to students. Students access to e-learning is described at 6.1.6.

FVZ uses open source or commercial licenses acquired either by the faculty or UNIZAR. In both cases an annual consultation about software needs is addressed to all staff. Aiming at reducing costs, UNIZAR promotes the acquisition of shared licenses between departments or establishments (e.g. IBM SPSS software).

6.2. Comments

FVZ has an in-house developed management platform that is unique in Unizar, in relation to its functionalities and the Student's Personal Area availability. The IT infrastructure, e-learning resources and platform available at the Faculty are well supported and free of charge. The Digital and Multimedia Service Unit offers support for the creation of audio-visual and digital learning materials, which is relevant and well received.

The FVZ staff is characterized by its high level of activity in the educational innovation field, which is a key improvement strategy for the Dean's Team.

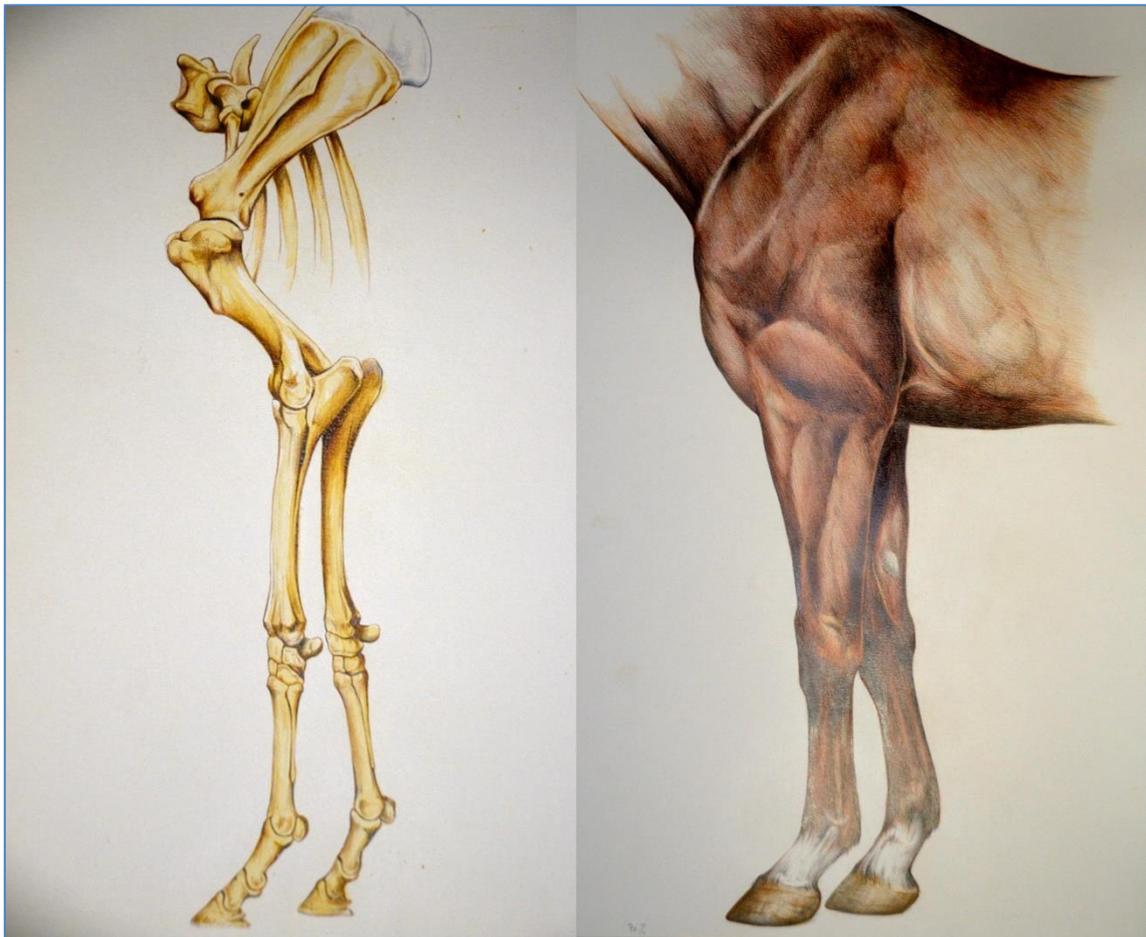
The library is a key agent in the new learning environments, both in its traditional and virtual format (electronic tools). It provides to the university community up-to-date electronic tools and training on digital competences which are available 24/7. In collaboration with the academic staff, it also offers training in resources and digital competences integrated in subjects. The Library is a highly rated service by students and teachers as from the results of the satisfaction surveys carried out by BUZ since 2005.

6.3. Suggestions of improvement

- Campus user accounts for students and staff with single-sign on.
- Measures for the improvement of e-learning resources such as a digital repository (e.g. images), promote the use of the available digital portfolio.
- Software and database technical update of the in-house management platform given the relevance of the Student's Personal Area.
- Expand working-group space areas and enable new workspaces specifically adapted to new models and learning environments.
- Have an attractive and uniform signalling of spaces and resources in the library.
- Increase the level of procurement in eBooks and multimedia resources (especially open resources).

In relation to the library:

- Extend the area for work groups and build up new areas adapted to changes for new learning environments (for instance a multimedia box).
- Mark properly the areas and the library resources/tools
- Acquire e-books and other multimedia material in order to complete the bibliography recommended by the academic staff.





7



Student Admission, Progression and Welfare

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 information related to advertise to future students is:

- Through the Web **Page of the FVZ** <http://veterinaria.unizar.es/>. This is a very useful info because a large amount of students that come from other geographical areas from Spain and France.
- **Open House Day**, where last-year high school students who want to get first-hand information about the Degree, <https://veterinaria.unizar.es/proyeccion-social/jornada-puertas-abiertas>
- **Speeches** about our Veterinary Degree are given at several High Schools at Zaragoza.

7.1.2. Description of the admission procedures for standard students

-) Selection criteria

The national law, Royal Decree 412/2014 of 6th of July, lays down the regulation for admission procedures for university studies, which has been developed at the UNIZAR by the Government Council Agreement of 3rd of April 2017.

After finishing the Baccalaureate, students must pass the University Access Exam (EvAU) There is no additional specific exam to enter the FVM. Access to Veterinary Degree at UNIZAR is regulated by a numerous clausus system: a certain admission rate is established attending to the number of students to be admitted (146) and the number of students demanding access. The EvAU includes two phases: a general phase (which is compulsory for all Baccalaureate students; maximum 10 points) and a specific phase with subjects related to the area of interest (which is voluntary and allows improving the grade up to a maximum of 14 points). Considering the high admission grade needed to access the Veterinary Degree, all students must pass both phases.

Admission grade = $0.6 \cdot \text{NMB} + 0.4 \cdot \text{CFG} + a \cdot \text{M1} + b \cdot \text{M2}$

Where NMB = Average grade corresponding to 1st and 2nd years of the Spanish Baccalaureate; CFG = EvAU General phase grade; M1, M2 = The two best grades of the subjects of the PAU specific phase; a, b = weighting coefficients of the subjects of the specific phase.

In the academic year 2018/2019, the admission grade was 10,925

In addition to standard procedures, there is a percentage of places reserved for students with special situations: 3% for students over 25 years old, 1,5% for students over 45 years, 1,5% for over 40 year old students with accredited work experience old, 3% for university graduates, 5% for students with a degree of disability equal to or higher than 33%, and 3% for high-level and high-performance athletes. In case that some of the special situation places are not covered, they will be added to the standard ones.

-) Policy for disable and ill students

Five percentage of the total places are allocated to disabled students. They must present an official certificate of disability, proving a rating of 33% or higher. There is the University Office for Supporting Diversity available that helps them to face the EvAU and to support them throughout their academic life, including adequate human, material, timing and curricular resources that may be needed.

Moreover, there are mechanisms for students with serious episodes of disease or impairments, such as that students can enrol in part time in order to adequate their study load to their illness, with a proportional reduction of fees, and students may suspend their academic activity without losing their vacancy and without paying fees. These permissions are regulated by the FVZ Continuity

-) Composition and training of the selection committee

There is no a specific Selection Committee to evaluate students because the system of entrance is regulated by National Procedures, as is described in point 7.1.2 a

-) Appeal process

Complaints to the admission procedure and EvAU correction, are resolved by the Organizing Committee within the set deadline and they have to be done through either directly to the Organizing Committee or applying for a second correction carried out by a different teacher.

-) Advertisement of the criteria and transparency of the procedures

All admission phases are fully transparent, rules and criteria are made public previously and results are published physically at FVZ secretary and online <http://academico.Unizar.es/acceso-admision-grado/inicio>

7.1.3. Description of the admission procedures for full fee students

Not applicable.

7.1.4. Description of how the Establishment adapts the number of admitted students to the available educational resources and the biosecurity and welfare requirements

The number of students admitted per year is strictly limited. The total number of admissions is mainly based on the teaching capacity required to achieve a satisfactory standard, based on the available facilities and staff. The number of new-admission students should comply with that established in the official document of the Unizar Veterinary Degree approved by ANECA i.e. 146 admissions. Each year, the FVM, by means of its Faculty Council, proposes to the Unizar Governing Council this specific number of places to be offered, which in turn sends it to the Government of Aragon for its approval.

The FVZ meets the biosecurity and welfare requirements and the size of the groups are appropriate according to the safety devices of the labs. (See 4.1)

7.1.5. Description of:

-) the progression criteria and procedures for all students

Full time students have to pass, at least:

- 6 ECTS at the end of the first year of enrolment at the UZ
- 30 ECTS at the end of the second year of enrolment at the UZ
- 60 ECTS at the end of the third year of enrolment at the UZ.
- A minimum of 18 ECTS more on each academic year from the fourth year of enrolment onwards, with exception to those students who have less than 18 ECTS to finish.

Part time students have to pass, at least:

- 6 ECTS at the end of the first year of enrolment.
- 30 ECTS at the end of the second year of enrolment.
- 36 ECTS at the end of the third year of enrolment.
- A minimum of 12 ECTS more on each academic year from the fourth year of enrolment onwards, with exception to those students who have less than 12 ECTS to finish.

Full time students have 8 years to finish their veterinary studies, on the other hand part time students do not have this restriction. However, if a part time student becomes a full time student, every part time year will count as a half one.

For more details the regulation can be checked on the website of the Faculty:

https://consejosocial.Unizar.es/sites/consejosocial.Unizar.es/files/users/csocal/pdf/acuerdos/2014_10_28/Acuerdo%20mod%20Reg%20Permanencia.pdf

-) the remediation and support for students who do not perform adequately

Students who do not perform adequately have at their disposition: the University Guidance Plan and the Tutoring Action Plan. See 7.1.6. "Guidance and counselling".

There are other systems in UNIZAR to favour the permanency of the students:

- An application for the cancellation of a sitting can be presented to Permanency Committee, accompanied by the appropriate supporting documents or certificates.
- Students who fail any ordinary sitting, she/ he has the right to be evaluated by an Examining Board.
- Students who have failed all six regular examinations of a subject can apply to the Rectorate for an extraordinary exam (7th sitting).

-) the rate and main causes of attrition

The official attrition rate is currently decreasing in our Faculty, i.e. 8,86%, 8.39% and 7.64% in the last three years (average 8,63%). Some students who drop out of Veterinary Degree do so because it did not meet their expectations. The academic results also have influence on attrition since the lower the academic performance and success, the higher the probability of dropping out.

-) the exclusion and appeal procedures

The exclusion procedures are described on 7.1.5, *the progression criteria and procedures for all students*. In case they are not compliant with that aforementioned criteria*, an application can be presented to the Permanency Committee of the Faculty for appealing, accompanied by the appropriate supporting documents. The decision shall be communicated to the applicant within a maximum of fifteen days. If the applicant does not agree with this decision, shall have the chance to appeal to the Permanency Committee of the UZ, whose resolution exhausts administrative channels.

-) the advertisement to students and transparency of these criteria/procedures

The previously mentioned exclusion and appeal procedure, Q231, is advertised permanently to students at UNIZAR website: <https://estudios.Unizar.es/pagina/ver?id=7>.

7.1.6. Description of the services available for students

Within the different services available for students, both at UNIZAR and FVZ, it is worth mentioning:

Guidance and counselling

- **University Guidance Plan:** Aiming at stimulating integration, education and student's development at the University, as well as, labour insertion. <https://veterinaria.Unizar.es/estudiantes/tutorizacion-estudiantes>
- **Tutoring Action Plan.** The Tutor-Mentor Programme is implemented on first year in order to foster student's integration by means of support, guidance and advice. Mentors are teachers and students who perform this labour voluntarily. <https://veterinaria.Unizar.es/estudiantes/programa-tutor-mentor>
- **Career guidance workshop** whose aim is to counsel brand new graduates and 5th year students in relation to accessing labour market and current peculiarities of the veterinary profession. <https://veterinaria.Unizar.es/proyeccion-social/jornadas-orientacion-profesional>.
- **Counselling Service for young people at the University of Zaragoza.** It includes legal, mobility, sexual and psychological counselling and study guidance
- **University Office for Supporting Diversity.** It ensures equality of opportunity by means of including students with special educational needs, in addition to foster sensitization and awareness of the university community. <https://ouad.Unizar.es/>

Management

- **The Secretary of the Establishment.** It supports all administrative on-site procedures, that can also be performed online through "Virtual Secretary" <http://academico.Unizar.es/secretaria-virtual>
- **Universa.** A service unit that counsels students that will perform internships in companies, gives career guidance to students who are about to finish their degree studies and specific work oriented training. <http://www.Unizar.es/universa/>
- **FVZ International Relationship Office** for guidance and advice for incoming and outgoing students of different national and international exchange programmes. <https://veterinaria.Unizar.es/movilidad/introduccion>

Associationism

- **The Delegation of Students** manages everything related to student's representation, sport, cultural and other integral education activities. <https://veterinaria.Unizar.es/estudiantes/delegacion-estudiantes>
- **Associations and groups for students.** Several associations sited at the FVZ with different scopes of action. <https://veterinaria.unizar.es/estudiantes/asociaciones#overlay-context=estudiantes/veterinarios-sin-tierra>. There are 11 student associations. They deal with several topics, such as equine and pigs, animal production, wildlife,

* This criteria does not apply to full time students who have less than 18 ECTS and to part time students who have less than 12 ECTS to finish their studies.

international exchange associations or board games. All of them carry out an intense activity and hold specific conferences to students

- **House of Student.** Meeting room for students in order to foster associationism and activities, available for all students. <http://casaest.Unizar.es/>

Support

- **“Antena Informativa del CIPAJ”.** Information Service for young people, promoted by the Zaragoza City Hall. <https://veterinaria.Unizar.es/estudiantes/antena-informativa-cipaj>

- **The Sport Activity Service** manages and promotes the university community sport activities and competitions. <https://deportes.Unizar.es/>. Fifth-year students organize the AnimalRunizar race annually, in which citizens and their pets run it together.

- **The Cultural Activity Service** manages and promotes all kind of cultural events within the framework of the university community. <https://cultura.Unizar.es/>

- **University Information Centre.** An integral and personalised service to attend the university community and citizens questions regarding University matters.

- **Housing Service** facilitates information about spare rooms and flats to be rented to Unizar students. <http://alojamiento.Unizar.es/>

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

The FVZ proposal about the number of students to be admitted on each academic year must be approved, in first place, by the UNIZAR Government Council and by the Government of Aragon afterwards. Therefore, following the recommendations given by ANECA and EAEVE, it is expected that the number of new students admitted will be similar to the current one, but no higher.

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

Student Admission procedures and bodies involved are the same for all UNIZAR studies and are established by national law and the developing regulations are approved by the Government Council of the UZ.

See 7.1.2. about criteria, committees, assessment and advertisement of the procedure.

Table 7.1.1 Number of new veterinary students admitted by the Establishment

Type of students	2019	2018	2017	Mean
Standard students	101	103	98	101
Full fee students	44	42	47	44
Total	145	145	145	145

Table 7.1.2 Number of veterinary undergraduate students registered at the Establishment

Year of programme	2019	2018	2017	Mean
First year	145	145	147	146
Second year	143	148	150	147
Third year	146	142	141	143
Fourth year*	43	57	43	48
Fifth year	296	288	316	300
Total	773	780	797	783

*The number of enrolled students in 4th year is lower because the external practices subject of 4th year is performed in 5th year so the total number is counted as 5th year students.

Table 7.1.3 Number of veterinary students graduating annually

Type of students	2019	2018	2017	Mean
Standard students	106	115	109	110
Full fee students	25	27	32	28
Total	131	142	141	138

Table 7.1.4 Average duration of veterinary studies

Average duration graduates	2018-2019	2017-2018	2016-2017	Mean
+ 0 – 1 year	5.44	5.39	5.31	5.38

Table 7.1.5 Number of postgraduate students registered at the Establishment

Programmes	2019	2018	2017	Mean
Official Master's Degrees				
MSc in Food Quality, Security and Technology	25	27	25	26
MSc in Animal Nutrition	17	21	18	19
MSc in Swine Health and Production	36	30	32	33
PhD students				
Food Quality, Safety and Technology	29	31	25	28
Animal Production	14	16	13	14
Medicine and animal Health	47	54	48	50

7.2. Comments

It should be mentioned that students are very satisfied with their stay at the School, both for their academic development and for the friendly environment and the high well-being level, which is mainly due to the rich cultural life related to student's associations and their cultural programming. Although our syllabus is pretty new, preliminary results show a rational average time to complete the Degree (table 7.1.4) lower to the national average rate 6,8 years.

7.3. Suggestions of improvement

A rational approach of veterinary education in relation to the requirements of veterinary profession and society in general is also needed. A control system of the student admission in all the Spanish Veterinary Faculties would be desirable.





8



Student Assessment

8. STUDENT ASSESSMENT

8.1. Factual information

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

The global student assessment is considered an integral part of the learning process. It is decided by the same boards involved in teaching planning and it is annually approved by the Faculty Council (see Chapter 3, 3.1). In fact, the time required for assessment is expressed as ECTS and included in the syllabus.

Most subjects combine continuing assessment of the student's day-to-day activity with the evaluation of supervised works, written exams for the evaluation of theoretical knowledge, and specific exams for the evaluation of practical skills. Many subjects also include mid-term tests. Teachers certify that students who pass the subjects have acquired the knowledge, competences and skills directly related to them.

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

-) Theoretical knowledge

Assessment of theoretical knowledge is mainly based on written exams. Specific methodologies depend on each subject, but multiple choice test (true or false, multiple-choice, matching type), short-answers, open-ended answers with limited writing space and, essays, and matching type tests are the most commonly used. Theoretical knowledge is also evaluated through continuing assessment and evaluation of supervised works. 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.

-) pre-clinical practical skills

Pre-clinical practical skills are primarily evaluated through continuing assessment, written reports. The acquisition of clinical competences is monitored and evaluated on daily basis, during clinical rotations activities at the Hospital and in Ambulatory Clinics by teaching staff and veterinarians that record in the log book of each student the successful accomplishment of clinical competences. Practical exams are sometimes made on healthy animals, organs, cadavers, patients or in the laboratory, depending on the subject. A positive evaluation of practical skills is required for passing the subjects.

-) clinical practical skills

Assessment of clinical practical skills is fully explained in Chapter 3.1.9 and in the Appendix of the teaching guidelines. The evaluation of the performance of the student during their EPT is given by the student's school tutor (40%) and a tutor from the EPT provider (60%).

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

As explained in Chapter 3, we have adopted a document of compliance of the curriculum with the Day One Competences approach, in order to ensure that all graduates achieve the required level of competence at the end of the studies (teaching guidelines Appendix). Besides, each student uses a personal logbook in Rotations in order to certify Day One Competences.

8.1.4. Description of the processes for:

-) ensuring the advertising and transparency of the assessment criteria/procedures:

The assessment process is officially regulated in the Statute of University Student (BOE, 2010) elaborated by the Ministry of Education of the Spanish Government:

<https://www.boe.es/buscar/act.php?id=BOE-A-2010-20147>

The assessment criteria/procedures are published in the teaching guidelines before the academic year starts. Moreover, the following information must be included in the examination official announcements: location, date and time.

The date of publication of results should be communicated at most 15 days after examination and with advance so that students can exercise their right to review, approved by the University Government Council, which is all detailed in the Statutes of Teaching Evaluation of the University of Zaragoza:

<http://www.Unizar.es/sg/doc/6.1.AcuerdoNormasEvaluacionMODIF.pdf>

-) awarding grades including explicit requirements for barrier assessments:

The process of awarding grades is also officially regulated in our University:

<http://www.Unizar.es/sg/doc/6.1.AcuerdoNormasEvaluacionMODIF.pdf>

Grades must be expressed as numbers, to which their corresponding qualitative grading is added: (Failing Grade: 0-4.9; Passing Grade 5.0-6.9; Grade B: 7.0-8.9; Distinction: 9.0-10). The cut-off score is 5. Likewise, the mention "Matrícula de Honor" (Excellent) can be awarded to those students that have obtained a grade equal to or higher than 9.0, with the restriction numbers derived from national regulations (number cannot be exceed 5% of students enrolled in a subject, unless the number of students registered is less than 20).

-) providing to students a feedback post-assessment and guidance for requested improvement:

The examination review is an essential part of the learning process and the starting point for feedback post-assessment. The improvement process is based on a follow-up of the student progress through a system of individualised tutorials by teachers that are considered the best method to carry out a correct guidance of the student.

-) appealing

In case of disagreement with the result of the review, the students can refute their grades at most 3 days after the date established for the review before the Dean. The specific procedure is fully described in the same Statutes

<http://www.Unizar.es/sg/doc/6.1.AcuerdoNormasEvaluacionMODIF.pdf>

The appeal procedures to exam results are fully explained on the article 18 of the Learning assessment regulation, <http://www.unizar.es/sg/doc/6.1.AcuerdoNormasEvaluacionMODIF.pdf>. Summing up, all students have the right to an individual review evaluated by an Examination Board that will take place in the following seven days after the publication of exam results. Against the review result, an application can be presented to the Dean, and in case the student does not agree with the Dean's resolution an application can be presented to the Rector of the UZ, whose resolution exhausts

8.1.5. Description of how and by whom the student's assessment strategy is decided, communicated to staff, students and stakeholders, implemented, assessed and revised.

The evaluation procedures of the subjects are proposed by the Department Councils, discussed in the coordination meetings and subsequently approved by the Faculty council. With regard to the examination calendar, according to the University legislation, there are three examination seasons and occur at the end of each semester (three weeks in January-February and four weeks in June) and also the two first weeks in September. In those periods, theoretical and practical classes are suspended. Each subject has two possibilities to be passed (January-February and June or June and September depending on if it is annual or semi-annual. Examination seasons are defined by the University Government and included in the Academic Calendar each course. The draft for the examination calendar of the Faculty is elaborated by a representative of the Committee for Assessment and Improvement of the Curriculum, together with academic staff and student representatives. After approval, the examination seasons are announced in June of the previous academic year. The calendar of exams, for the 1st and 2nd semesters is disclosed in July (before the academic year starts) in the faculty website and posted in a notice board next to the Academic Office. This procedure complies with the official document of the Degree in Veterinary approved by ANECA and the QA system of the Faculty.

8.2. Comments

The Faculty is encouraging students to participate more actively in the tutoring system, as an essential part of the learning process. The ways for tutoring are as much one-site as on line.

8.3. Suggestion of improvement

Updating the assessment methods to the new technologies would be desirable since it would be environmental-friendly and it will allow to a faster correction.

Bringing the student's enrolment dates forward will allow to start the teaching period at the beginning of September, however the School has no autonomy to do so as those dates are established by the UNIZAR Government Council.





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

Competences are linked to the subjects that make up the curriculum. All teachers involved in the different subjects must be accredited by ANECA (or regional agencies) in the corresponding subject areas, including training and research activities. In each subject of the programme, the lessons are assigned to the teachers that are specialized in the different topics. Each academic year, the QA System reviews the subject description guides and elaborates an annual report, as explained in Chapter 11.

The FVZ evaluates the activity of its teachers through the DOCENTIA programme (<https://unidadcalidad.Unizar.es/calidad-docente>), developed by ACPUA and managed in the FVZ by the Vice-Rectorate for QA. All the academic staff of the FVZ obtained a positive evaluation in the DOCENTIA-UZ programme in the last academic year.

To be promoted to a new position, University teachers must be accredited and, afterwards, get through a competitive examination. The research activity of the staff is also externally evaluated by the National QA Agency for Research by 6-year periods.

The table down below shows the number of European Board of Veterinary Specialisation (EBVS) Diplomates among FVZ teachers and residents*

	Academic staff	Residents
European College of Veterinary Pathologist (ECVP)	4	2
European College of Small Ruminant Health Management Medicine (ECSRHM)	6	3
European College of Animal Welfare and Behavioural Medicine (ECAWBM)	2	3
TOTAL	12	8

Specific training in biosecurity for support and teaching staff depends on the Unit for Management and Coordination of Prevention of Labour Risks (<http://uprl.Unizar.es/>). Specific courses about general labour risks, and those associated to laboratory/animal facilities or use of gases in laboratories are periodically given

Concerning teaching and research training, our teachers can attend courses on the use of different bibliographic tools and online teaching tools, such as the management and applications of the Virtual Campus (development of teaching material for students, evaluation, subject management, etc.). In the past years, the FVZ offered pedagogical and IT training through the Instituto de Ciencias de la Educación (ICE).

On the other hand, the UNIZAR programme “Innovation and Improvement of Teaching Quality projects” offers our teachers the possibility to apply for funding for new initiatives to improve and set up innovative teaching techniques, and to increase the quality of our programmes at different levels. In the last ten academic years, the FVZ has developed 231 innovative projects.

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

Each academic year, the Departments present to the Faculty Council the position requests to increase and/or replace their staff. The Council evaluates the requests and, if approved, they are submitted to the Rectorate, which evaluates them attending to the UNIZAR staff annual action plan (see 9.1.8) and funding availability.

In the case of permanent positions, a competitive examination is called, to which the candidates must previously have the required accreditation, in which teaching, research and management activities are evaluated. In these examinations, the evaluation is carried out by an examining board composed of teachers belonging to the specific subject area. For temporary hired positions, the selection and recruitment is performed through contracting committees of the subject area, which evaluate the record of the candidates.

* Veterinary Graduates from other European countries who are performing the European diploma in our faculty.

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

The selection and recruitment of support staff directly depends on the Unizar Rectorate, which decides its number depending on the estimations from the UNIZAR Staff Report based on the needs that Faculties have sent previously. For civil servant support personnel, the University calls open access competitive examinations. These examinations are called for the different categories/levels of responsibility. The University can also hire both permanent and temporary staff.

The VTH can propose to contract clinical, technical and administration staff from its own budget. The contracting system follows the same regulations and procedures as the rest of the general competitive processes at the UZ.

Programmes for continuing training of our academic and support staff have been successfully implemented, through courses dealing with quality culture, definition and assessment of competences, assessment of learning results, academic management, and use of its virtual teaching.

<http://ice.Unizar.es/formacion>

http://www.Unizar.es/gobierno/gerente/vg_humanos/pas/formacion/conv_general.html

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

The hired non-permanent academic staff has the possibility to accede to a permanent position through an examination process (public, open access, and with the participation of an examining board), once they have obtained the accreditation by ANECA or the QA regional agencies for those permanent positions. Equally, the permanent staff can be promoted to an upper level in the teaching career through the same type of examinations, once they are accredited by ANECA. Since 2011, this process for stabilisation and promotion of the Unizar teaching staff has been limited, due to restrictions in public funding. The programme was reactivated in 2016.

The results of the DOCENTIA-Unizar evaluation are also taken into account for a limited annual wage supplement in the teacher's salary given by the regional authorities.

There are also programmes for the promotion and relocation of the Unizar support staff, mainly by means of free examinations to accede to a superior category or to move to another service within the same category. Admission and assessment criteria are published in the BOE and BOA, as well as in the Unizar and FVZ website.

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

Full-time teachers cannot undertake outside work. In case of services or development of research agreements with companies, the University of Zaragoza has rules controlled by the OTRI, office related to conditions for time and incomes of teacher. Part-time teachers are allowed to do outside work and, in the case of Associate Teachers, outside work is mandatory to get this position; knock out taxes are charged to teacher of the staff in case they take outside work.

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

Students take online surveys to evaluate teachers and subjects. There are various committees that ensure the quality of the process, some of these are advisory committees that assess teacher self-evaluation reports, considering DOCENTIA programme data, which are handed over to the Technical Evaluation Committee of the University (in case of Veterinary studies, Sciences in Biomedical Commission) together with student's surveys. The final report is done by the Teaching Activity Quality Committee. In the event of a negative evaluation, the teacher will get a warning and bonus payments will be discontinued.

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

The programming of needs and review of the full time academic and support staff are revised annually. In case of the academic staff, the analysis of hiring needs is carried out with the teaching activities scheduling (lectures and practices) for the following academic year. For this purpose, the number of subjects, ECTS, students, practice groups and its size are considered and the scheduling is performed by Departments. Then, it is evaluated by the Degree Assurance Committee that informs the Faculty Council that will raise it to the Vice-Rector of the academic staff, who

will present a final proposal of prospected new hiring and renewals that will finally be approved by the Government Council.

Regarding support staff, departments, depending on their needs make a proposal to the Faculty Manager, who raises it to the Unizar Manager who finally propose it to the Government Council of Unizar for its approval, with a favourable opinion of the support staff trade union.

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 quoted before, in 9.1.7, Departments play an important role when new academic staff is requested as they report which areas need more personnel, determine the allocation of the new academic staff, as well as the number of hours and type of teaching. Department proposals must be approved by the UNIZAR Government Council annually. In case of sick or maternity leave, UNIZAR has established an emergency hiring process that has to be approved by Departments in order to avoid teaching being left unattended.

On the other hand, requesting new hiring support staff follows other procedures. Support staff Manager approves new hiring support staff requests, responsibility which is shared with manager of the Faculties and directors of Departments. Needs are assessed depending on the technical support needed for practices, teaching and clinic and research activities. Support staff new vacancies are discussed at the University Negotiating table with worker's union and stakeholders representatives.

At the FVZ level, the assessment of the staff activity is conducted and approved yearly by the Faculty Council through reports of the Dean's Office, the Vice-Deans for Academic Organisation and Quality, the FVM QA System, and the FVM Staff Management Service. At UNIZAR level, the assessment of the staff is carried out by the Vice-Rectorate for Quality and the Vice-Rectorate for Academic Affairs

Table 9.1.1. Academic staff of the veterinary programme

Type of contract	2018/2019	2017/2018	2016/2017	Mean
Permanent				
Full Professors*	36	32	32	34
Associate Professors**	78	81	84	81
Temporary				
Assistant Teachers***	26	22	22	23
Associate Teachers****	42	39	36	39
Total (FTE)	182	174	174	177

*Full Professor (Catedrático de Universidad): full-time, civil servant, tenured position

**This item includes tenured positions, both civil servant and hired Associate Professors (Titular de Universidad and Contratado Doctor)

***Assistant Teachers (Ayudante Doctor, Titular Interino, Colaborador): full-time, temporary, hired position

**** Associate Teacher (Asociado): part-time (variable dedication), temporary, hired position

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

Type of contract	2019	2018	2017	Mean
Permanent (FTE)	90	90	90	90
Temporary (FTE)	90	90	90	90
Total (FTE)	90	90	90	90

Table 9.1.3. Support staff of the veterinary programme

Type of contract	2019	2018	2017	Mean
Permanent (FTE)	52	53	54	53
Temporary (FTE)	36	35	33	35
Total (FTE)	88	88	87	88

Table 9.1.4. Research staff of the Establishment

Type of contract	2018/2019	2017/2018	2016/2017	Mean
Permanent	-	-	-	-
Temporary				
Predoctoral	24	25	26	25
Postdoctoral	-	-	-	-
Staff associated to Research Project/Group	25	27	28	27
Total (FTE)	49	52	54	51

On the other hand, The VTH works as an independent management unit whose Director is elected by the VTH Council among the academic staff of the Animal Pathology Department of the FVZ. The VTH is self-funded units thanks to the income from its clinic activity. Its rates are approved by the Government Council and Social Council of Unizar. Operating and personnel expenditures are afforded by Unizar, with the exception of the grants given to resident students.

The table down below shows the **academic staff** that works at the VTH, whom are all veterinarians. There are also a total of 12* technicians, 5 support staff and 15** residents.

	Academic staff	
	Permanent	Temporal
Small Animals/Equine	12	15
Food Animal	4	4
TOTAL	16	19

9.2. Comments

Like most of Veterinary Schools in Spain, the number of teachers with mention in DOCENTIA-UZ assessment programme is remarkable, so the FVZ counts with a highly qualified, motivated and experienced academic staff. Nevertheless, due to the size of the groups, too many teaching hours are needed to cover the rotations of the clinical teaching planning, so Associate Teacher are hired. This situation is an important issue because it increases the number of these part-time temporary contracts, which leads to hire teachers with very low expectations for promotion. And, if we add the progressive aging and retiring of the permanent academic staff, the future is not very optimistic.

Another important issue that should be addressed happens when a vacancy due to retirement is whether cancelled or substituted by a lower quality vacancy.

9.3. Suggestions of improvement

Reducing the number of part-time temporary contracts, renewing aged permanent academic staff and assuring new teachers generation in clinical areas, mainly in food animals, should be a priority.

* Some of them are temporal teachers. There are just two technicians for Diagnostic Imaging

** All residents are given a grant.



10.

**Research Programmes,
Continuing and
Postgraduate Education**

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 veterinary education

The FVZ is an internationally recognized institution of excellence in veterinary research, contributing to the advancement of the frontiers of knowledge. The academic and research staff is involved in several research grants from different areas of knowledge, from which part of them are financed by European, National and Regional programs. These research projects allow the veterinary degree students to get involved in different tasks of the project, from field to laboratory work; some of these students will later enrol in a PhD programme at the FVZ. The scientific productivity of the FVZ academic and research staff is well known by the JCR (Journal Citation Reports) publications, most of which with high impact on the Veterinary Science field. Moreover, a significant number of veterinary learning books have been edited by FVZ staff, contributing to the excellence of the establishment. As a consequence, FVZ teaching is based on the methods of scientific research, driving students into direct contact with research since the beginning of their University education.

The research groups in which professors are involved are recognized by the Aragon government (Appendix 9). They addressed different topics, among others, Zoonosis and Emerging Diseases, One Health field, Genetic, Physiology and Biochemistry of animal diseases and comparative with humans, food safety, new technological processes for food.

Research groups have several thematic lines which includes Basic Sciences, Animal Health, Medicine and Surgery, Animal Production and Food Technology. Researchers also belong to different Research Institutes, namely regarding:

- **Agro-food Institute of Aragon (IA2)**, a mixed Centre between the University of Zaragoza and the Research and Agro-food Technology Centre. It was approved by the Aragon Government on the 22nd of May 2015 and whose headquarters are at the FVZ facilities.
- **The IIS of Aragón**, which is the Health Research Institute, made up of the Miguel Servet University Hospital, Lozano Blesa Clinic University Hospital, UNIZAR and Health Science Institute of Aragon.
- **Research University Institute of Engineering in Aragon (I3A)**, where some of our lecturers are collaborating.

The Centre for Transmissible Spongiform Encephalopathy and Emerging Animal Diseases is also established at the FVZ facilities, whose main objectives are research and diagnosis in the Transmissible Spongiform Encephalopathy field, as well as other emerging animal diseases of increasing relevance currently and in the future. The Centre staff are mainly FVZ professors. Some students do some stays at the Centre to collaborate in different activities. The Centre is organized into:

- Spongiform Encephalopathy and Rabies diagnosis Laboratory of Aragon
- Research and Counselling Centre for Transmissible Spongiform Encephalopathies from the Ministry of Agriculture, Food and Environment.
- Associated Laboratory of the Consumer Agency of Spain and Aragon, Food Security and Nutrition.
- OIE (International Epizootic Centre) for BSE and scrapie diseases

Taking into account the aforementioned activities, students have the opportunity to participate in research activities throughout different programmes:

- **Collaboration scholarships.** Undergraduate students can get involved in research projects of the Departments by means of these fellowships. They are sponsored by the Spanish Ministry of Education, Culture and Sports. Applicants are selected every year on the basis of their curriculum and their motivation on the project. These grants aim to initiate students into researching directly from the studies they are performing. These scholarships allow funding for 10 students during the last three full academic years, within Pathology, Animal Production and Food Science, Agricultural Sciences and Anatomy, Embryology and Genetic Departments.
- **Voluntary work.** Students may participate in research projects coordinated by the Departments. Most departments offer this possibility to students who voluntarily express their wish to become involved in research, and the degree of participation is determined by the researcher in charge of the project and the student. Voluntary work frequently represents the first step of the student's research career. Professors involved in voluntary work are normally teaching Microbiology and Immunology (30 second year students participate in 5 annual departures to slaughters and laboratory work to process the samples taken.); Animal Production and Welfare (6 students participate in departures to farms and laboratory work); and Meat Quality group (3 students each year collaborate since the first till the last

year of the degree). **This research activity is recognized as elective ECTS for collaboration in research since 2009-2010.**

- UNIVERSA. Students participate in extracurricular practical activities, regulated by UNIVERSA. These activities are carried out within different areas of the FVZ and they last from 1 to 3 months, however some may last 6 months. Last academic year 386 practical activities were accomplished, out of which 24 took place intra-murally at the Spongiform Encephalopathy lab and Animal Pathology, Biochemistry and Molecular and Cellular Biology, Anatomy, Embryology and Animal Genetics, Animal Production and Food Science and Pharmacology and Physiology Departments
- SCRUM (Small Ruminants Service): Students participate in in extracurricular practical activities at the SCRUM. Last academic year 80 students participated.
- Undergraduate Dissertation. It consists on an experimental research base on a laboratory experimental part, or on an analytical or a clinical study, or on a critical review. Students work independently and are supervised by teachers of the FVZ. The Thesis is normally an experimental work that has to be defended to an advisory examining board and is assessed as a final part of the Degree (6 ECTS)

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

The current number of Diplomates of the European Colleges among our academic staff is 16, and the number of teachers accredited by the Spanish Small Animal Veterinarians Association is 10 (Annex 10.1.2). Our academic staff's aim is to encourage undergraduate students to specialize within the different Veterinary areas. Small Animals Consultations of the VTH are attended by Veterinary Degree professors supported by residents (R1, R2 y R3). The number of Postgraduate Resident students of first and second year (R1&R2) are 11, and 2 of third year (R3) at the Small area of the VTH, which collaborate with 4th and 5th year intern students (30 selected students) and with all 4th and 5th year students coming from rotations of different 4th and 5th year subjects. Moreover, a few PhD Medicine and Animal Health students occasionally interact with undergraduate students. Clinical trainings of Diplomate students, Residents and Interns do not generate conflicts related with case management, but a higher quality learning due to the exchange of information among cases.

In relation to SCRUM students, the grant holder and the resident of the ECSRHM (European College of Small Ruminants Health and Management) are in charge of organizing the clinical service. They are responsible, among other activities, for receiving the cases and distributing them among the groups of interns, for appointing the responsible to examine the animals and carry out complementary tests, treatments if necessary, post mortem examination and sampling. Afterwards, the postgraduate's students, under the supervision of the lecturers, prepare the report to be sent to the veterinarian that referred the clinical case. The work between postgraduates and internal students, rather than being opposites, they complement each other.

Regarding the European College of Veterinary Pathologist ECVP, residents are checking post mortem cases, and they help to their discussion with undergraduate students.

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 method research and evidence-based medicine, and, consequently, their teaching is permanently linked to scientific activities. Professors communicate their knowledge to the students in both lectures and practical classes; knowledge partially obtained from their research projects, and collaborations with Research Institutes (IA2, IIS and I3A).

From the second year onwards, collaborations are offered to students to take part in research practical activities with different Departments (described in 10.1.1. as "voluntary work"), therefore, students are aware of the importance of scientific research for their training as future veterinarians, which allows them to see and interact with innovative techniques that are carried out in research.

At Small Ruminants Veterinary Teaching Hospital, students present and discuss clinical cases, of which the best works are submitted to posters or oral communications in national scientific events, (congresses, conferences) as SEOC (Spanish Society for ovine and caprine) or the Small Ruminant at the international Livestock Fair, with the support of Veterinary Faculty Teachers. Most of the times students have to defend the communication or poster at the aforementioned events, or at Conferences at Official Professional Colleges at Zaragoza, Teruel and Navarra, or at International Congress of Small Ruminants Health and Management. The Porcine Service also organizes sessions where students have to perform communications at the international Livestock Fair (FIGAN).

The equine medicine and surgery service is formed by two veterinarians and anaesthetist staff. The two main lines of research developed by the equine medicine and surgery service are regenerative therapies with mesenchymal stem cells applied to pathologies of the equine locomotor system and the development of new equine laparoscopic surgery techniques. The development of these lines of research is carried out in an interdisciplinary way so that we collaborate with research groups of this Faculty (LAGENBIO) as well as Human Medicine. Every year, students of this boarding school take part in the elaboration of posters or oral communications in the two main annual congresses of equine clinic that take place in Spain: The International Congress of Medicine and Equine Surgery (SICAB) and the Annual Congress of the Spanish Association of Equine Practitioners (AEVEE).

Our undergraduate students are also collaborating very actively at national Livestock Fairs, (once a year, (FEMOGA) and once every two years (FIGAN)), working directly with animals and at the FMV stand, which means a lifelong learning in the veterinary studies.

Moreover, FVZ did organize the international meeting [5th Symposium on Veterinary Sciences Zaragoza - Toulouse - München](#), focused at the undergraduate students participation. The FVZ, together with the École Nationale Vétérinaire de Toulouse and the Faculty of Veterinary of the University Ludwig-Maximilians of Munich, were the official organizers of the Symposium, held at Zaragoza on 3-4 November 2016. The event allowed organisers to share their teaching and research activities, and its aim was to achieve a solid Spain-France-Germany collaboration in the veterinary field within the European Space for Higher Education frame. The participation at the Symposium was restricted for students/lectures/researches from the Munich, Toulouse and Zaragoza Veterinary Schools, and there were 126 attendees. This strategy intends to have a very close relationship among students from the three Veterinary Schools organizers, focusing at the Research activities developed by students.

In general, this strategy intends to show students how research results in knowledge and how science is in permanent evolution, to foster their interest for scientific work and to demonstrate how crucial a permanent update is to become a competent professional.

In addition to teachers' initiatives, students organize various training activities such as seminars, workshops and even international meetings like AVAFES (Veterinary Association for the Care of Exotic and Wildlife) and IVSA (International Veterinary Students Association), with the participation of not only FMV teachers but also national and international professionals, with a special concern on graduates updating.

The Veterinary Faculty is also participant of out-research activities, once a year, as the Science Week and the Night of the Researchers. Our postgraduate students together with some undergraduate provide a workshop, to open Science to society at the city of Zaragoza.

Finally, it is important to highlight that since 2014, the Degree in Veterinary is recognised as level 3 Master in MECES, which implies that students have to be trained along their studies in scientific activities.

-) are initiated to bibliographic search, scientific methods and research techniques, and writing of scientific papers

The FVM Library offers courses for undergraduate students to initiate them on the Bibliographic search and managements, databases and scientific specific searches. These courses are recognized as elective ECTS for the students, and they are very important and needed to develop several work-groups mentored by professors of different subjects in order to perform the Graduation Thesis, for which students have to carry out research techniques and writing following the method of scientific papers. Moreover, there are many subjects mainly belonging to the Basic Science subject's groups, where students are initiated at the research techniques. This method is required at the syllabus, which is consistent with a Degree of Master (MECES), that requires studies in scientific activities.

-) are offered to participate to research programmes on a non-compulsory basis

As mentioned at 10.1.1, students can collaborate with research at non-compulsory basis programmes, through voluntary work, collaboration scholarships and extracurricular practical work.

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 FVZ programme is organized taking into account suggestions or external requests from professionals or scientific organizations, colleagues and teacher's initiatives. Furthermore, an effort is made to offer courses in all main areas of employment, Small Animals and Small Ruminants Clinics and Pathology, Animal Health, Animal Production and Food Safety. In addition to the latter, the establishment is fully aware of the profession and community needs, since the chairman of the National Veterinary Professional Colleges Council is a Professor of the FVZ. The FVZ has also a close relationship with the Official Veterinary Professional College from Zaragoza, Huesca and Teruel (the three Aragon provinces), as courses and workshops are continually being held on their facilities.

On the other hand, all the official Master's programmes imparted at the FVZ have an academic and professional orientation. In particular, the Master's Programme in Swine Health and Production offers students the possibility of incorporation to the professional activity in a field in which Aragón and Spain holds a strong position in the European livestock sector. Thus, the two European Colleges (Veterinary Pathology and Small Ruminants Management) are training students in those specific professions.

Finally, the FVZ also holds continuing education for undergraduate students through Chairs took out by professional companies like Royal Canin.

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

The number of PhD students registered at postgraduate programmes is expected to be the same as previous years, considering that scholarships granted by the Government (Regional and National) will not change in a very near future (see Table 10.1.2). However, as a new Master Degree will begin, new students might join our PhD Programme in the academic year 2021-2022 (6 students), mainly those that will follow the itinerary of Translational research.

Regarding the postgraduate programmes through the development of an official Master's, a new official Master's Degree in One Health will be launched starting on the 2020-2021 academic year, which has already been approved by the UNIZAR Government Council and the Government of Aragon. Therefore, considering this new Master's Degree, the prospected number of post-graduate students is expected to increase in 30 students. This new Master is the basis for creating a Master jointly with the Veterinary Schools of Munich and Toulouse within One Health context.

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

Research: The Research Commission of UNIZAR (RC, <http://www.Unizar.es/institucion/organos-de-gobierno/comision-de-investigacion>) gives advice about research policy and services, annual and multi-annual priorities. RC evaluates and proposes to the competent body the resolution of the University research projects. This commission also follows and verifies the research activity of the University of Zaragoza, accredits training researchers and communicates new research projects release and research fellowship calls through the iUNIZAR bulletin and the SGI (research management service) webpage (<https://sgi.Unizar.es/etiqueta/45>). In addition, research groups from the FVZ belongs to the IA2, whose headquarter is located at the FVZ. The governing body of IA2 decides the IA2 strategic research lines in its four Divisions. IA2 also acts as Project manager and promoter, facilitates the transference of research results to the society and has its own fellowship for young researchers. Relevant information about IA2 activities and research calls are sent to all members by email through the IA2 bulletin.

Our **research strategy** is based on Unizar-validated groups (Annex I, 10.1.1.), that are integrated by multidisciplinary members. The activity of the FVZ can be framed in 10 areas of Veterinary Sciences, which integrate the research strategy of our Establishment:

- 1) Research on Animal Health.
- 2) Research on Animal Medicine and Surgery.
- 3) Research on Food Technology, Safety and Hygiene.
- 4) Research on Animal Production, Nutrition, and Genetics.
- 5) Research on Toxicology and Pharmacology.
- 6) Research on Animal Physiology, Endocrinology.
- 7) Research on Biochemistry, Molecular Biology and Biomedicine.
- 9) Research on Basic Sciences
- 10) Research on Veterinary Anatomy and Embryology

Continuing education programs: UNIZAR has a permanent training plan for teaching and research staff, agreed with the PDI Sectorial Board (BOUZ 6-18). ICE, in collaboration with the Vice-Rectorate for Academic Policy, Information Technology and Communication, Scientific Policy, Students and Employment and Culture and Social Projection, offers continuing education activities. These courses aim at the Unizar PDI, as well as their affiliated centres, which focus on different topics in relation to the improvement of teaching, research and management skills (<https://ice.Unizar.es/formacion/formacion-continua/formacion-continua>). The annual courses offer is communicated to the university community through the iUNIZAR bulleting. In

addition, different researchers and professors of the FVZ offer continuing education courses for Health Administration Veterinarians of the Government of Aragon (CIEETE) and secondary school teachers.

Postgraduate education programmes: Official Master's Degrees are evaluated by the Faculty Board that proposes them to the UNIZAR Government Council for approval, with a favourable opinion of the Graduate Studies Commission, and the Government of Aragon gives the final authorisation for their implementation

The FVZ offers three Official Master's Degrees: Health and Pig Production, Food Quality, Safety and Technology and **Animal Nutrition**. The latter two have been recently elected as **Master of Reference** in the **University of Zaragoza**. The FVZ also collaborates in programmes involving other schools of Unizar.

Information about master programmes are disclosed on different websites from FVZ (<https://veterinaria.Unizar.es/>) and UNIZAR (<https://academico.Unizar.es/grado-y-master-master/acceso-y-admision/oferta-masteres-universitarios>). Following the guidelines of the UNIZAR Internal Quality Management System (SIGC, <https://estudios.Unizar.es/pagina/ver?id=7>), Master programmes are implemented, assessed and revised by the Quality Assurance Committee of the Degree (CGC) and the Coordinator of the Master.

FVZ also offers other **five Education programmes** (<https://veterinaria.Unizar.es/academico/estudios-propios>): Master's Degree in Small Animal Clinic I and II, University Extension Certification in Sheep and Goat Clinic (2018-2019), Specialization Diploma in Small Ruminant Clinic, University Expert in Anaesthesia and Small Animal Surgery. These degrees are proposed by the departments, assessed by the Graduate Studies Commission and approved by the UNIZAR Government Council. The Graduate Studies Commission of the University is responsible for establishing the criteria for an annual evaluation of the quality of their own degrees. These postgraduate programs are communicated to society through the Unizar webpage <https://academico.Unizar.es/formacion-permanente/oferta-de-estudios-propios>, information regarding credits, subjects, vacancies, selection and evaluation criteria is displayed.

The PhD School of Unizar (<https://escueladoctorado.Unizar.es/>) organizes and monitors the training of doctoral students, every PhD program has an Academic Commission that organizes, designs and coordinates the programme; establishes additional requirements and criteria for the selection and admission of students; and follows the progress of research and training of doctoral students. **FVZ collaborates in several PhD programmes**, <https://escueladoctorado.Unizar.es/es/programas-doctorado-universidad-zaragoza>, involving other schools of UNIZAR (PhD programmes in Biochemistry and Molecular Biology ; Food Quality, Security and Technology ; Animal Breeding ; Biomedical and Biotechnology Sciences and Animal Medicine and Health).The annual offer is communicated through the iUNIZAR bulleting and local newspapers.

Table 10.1.1. Number of students registered at postgraduate clinical training

	2018-19	2017-18	2016-17	Mean
Small Animal Medicine & Surgery	24	24	24	24
Small ruminants: European College of small ruminant health management Diploma	3	2	1	2
European college of Veterinary Pathology Diploma	2	3	4	3

Table 10.1.1. Number of students registered clinical training

	2018-19	2017-18	2016-17	Mean
Small Animal Medicine & Surgery	30	30	30	24
Small Animal Endocrinology Service	5	2	14	7
Small Ruminants Health & Management	25	20	20	22

Table 10.1.2. Number of students registered at other postgraduate research training

	2018-19	2017-18	2016-17	Mean
PhD Programmes	108	121	110	113
PhD Programme in Medicine and Animal Health	46	54	47	49
PhD Programme in Biomedical and Biotechnological Science	18	15	14	16
PhD Programme in Analytic Science in Chemical	6	8	7	7
PhD Programme in Biochemistry and Cellular and Molecular Biology	1	1	1	1
PhD Programme in Chemical Engineering and Environment	1	1	1	1
PhD Programme in Food Quality, Security and Technology.	26	28	27	27
PhD Programme in Animal Production	7	8	7	7
PhD Programme in Agricultural and Natural Environment Sciences	3	6	6	5
Official Master's Degrees	78	78	75	77
MSc in Food Quality, Security and Technology	25	27	25	26
MSc in Animal Nutrition	17	21	18	19
MSc in Swine Health and Production	36	30	32	33

Table 10.1.3. Number of students registered at other postgraduate programmes

Programmes	2018-19	2017-18	2016-17	Mean
Small Animals Internal Master I	11	11	11	11
Small Animals Internal Master II	11	11	11	11
Endoscopy Diploma	*	2	2	2
Endoscopy and Veterinary Reanimation Diploma	2	*	*	2
Small Animal Anaesthesia and Surgery	2	2	2	2
Diploma of specialization in Ovine and Caprine clinic	3	1	3	2
Ovine and Caprine Clinical Diploma	20	15	12	15

*Not offered or imparted.



Table 10.1.4. Number of attendees to continuing education courses provided by the Establishment

Courses	2018-19	2017-18	2016-17	Mean
Workshop of Immune-mediated Dermatopathies in small animals	*	20	*	20
Workshop of Allergic Dermatitis in small animals	*	30	*	30
Workshop of Radiotherapy in small animals	*	35	*	35
Course of Thoracic and Abdominal Echography in small animals	*	30	*	30
Workshop of Feline Hyperthyroidism	25	*	*	25
Workshop of Anaesthesia	30	*	*	30
Workshop of Clinical Haematology	35	*	*	35
Workshop of Digestic System Pathology	25	*	*	25
Workshop of Urinary System Pathology	30	*	*	30
Small Ruminants Clinical Diagnostic Certificate	20	15	12	16
European course: Continuing Professional Development on Sheep Respiratory Diseases (European College of Small Ruminants Health and Management)	*	21	*	21
European course: Continuing Professional Development on Diagnostic Imaging Techniques (European College of Small Ruminants Health and Management)	*	22	*	22
Continuing education for Equine Veterinary practitioners	50	60	55	55
Course on Ovine and Caprine Pathology	15	18	12	15
Applied Biostatistics for Health Sciences Workshop	*	*	17	17
Introduction to programming applied to Animal Breeding	*	7	7	7
Seminars of PhD Programme in Animal Production	*	*	6	6
Seminars of PhD Programme in Medicine and Animal Health	*	20	25	22
Course of cooperation to development	16	10	24	17
Swine conferences cycle	*	34	36	35
Aragon Porcine Veterinary Association Workshop	*	250	250	250
XIII and XIV International Technical Meeting Magapor	*	170	150	160
Improving communication skills in the veterinary clinic	4	10	*	7

*Not offered or imparted.

Table 10.1.5. List of the major funded research programmes in the Establishment which were on-going during the last full academic year prior the Visitation

Research programmes	Scientific topic	Number of projects	Grant/year (€)	Duration
European Grants (H2020, POCTEFA, Research Council of Norway)	Animal Health	3	17.5562,5	3 years average
	Food Science	4	371.628,9	3 years average
	Others	2	191.393,8	3 years average
National Grants (Education, and Economy and Competiveness Ministry)	Animal Science, Food Science and Others	82	2.080.547,86	3 years average
Subtotal			738.585,25	
Technology transfer and Collaborative projects (University-Enterprises)	Multidisciplinary	55	662.663,74	1,2,3 and 4 years

10.2. Comments

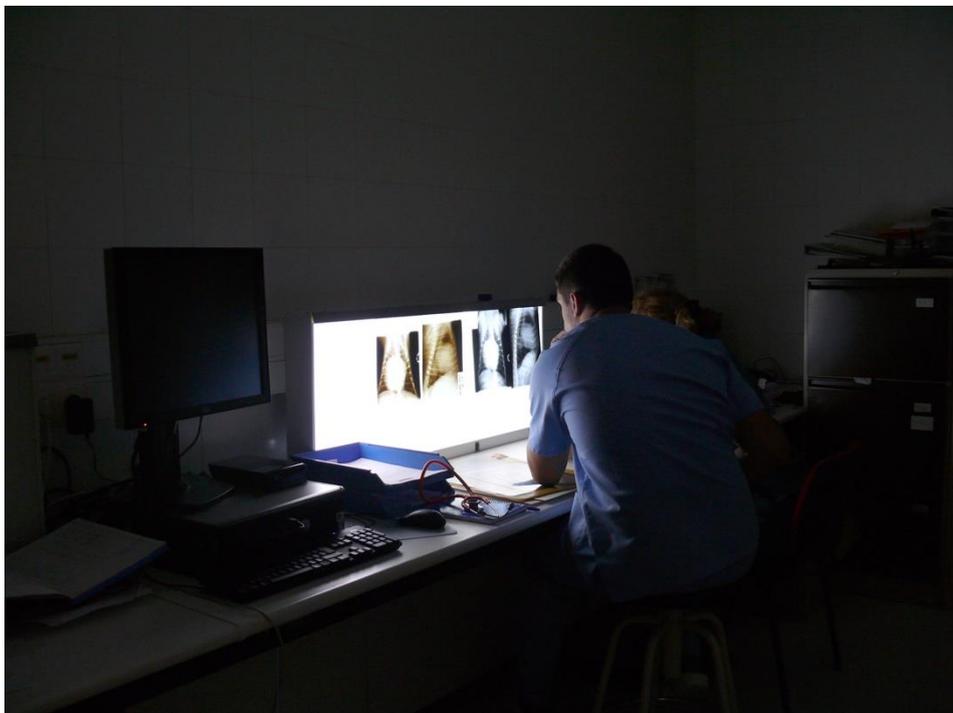
The research and the undergraduate research programmes are one of the strengths of the FVZ. Our Faculty is very well known from an international point of view due to its research results and collaborations with many others research groups, all over the world. All undergraduate students are encouraged by teachers to join research activities in different programmes during their whole training period. This builds a strong network integrated by undergraduates, PhD and Master's students, research groups and teachers. As a consequence, a significant number of our graduates continue to our postgraduate programmes, and many of them conclude a doctoral thesis. In fact, most of the students admitted at the FVZ PhD Programme in Veterinary Sciences are our students. At the FVZ, research is very strong in basic Science, but also in ruminants and porcine, in food and science, neurodegenerative diseases among others, not only for animals, but also for humans. The FVZ is one of the strongest schools on the research field at Unizar.

As quality indicators of the research activity of the FVZ, 1109 scientific papers were published by our research groups between 2015 and 2018, all of them in JCR indexed journals. This activity allows us to succeed in the application to different competitive calls of projects and predoctoral grants, with an average in the last three years of 113 students/year to conduct their PhD training

10.3. Suggestion of improvement

A new Master on One Health will be launched in the 2020-2021 academic year, which will be coordinated by our School. Furthermore, we are planning to make it international in order to open collaborations with the Toulouse and Munich Vet School.

There are also plans to promote the FVZ continuing training offer, adapting it to the new profession and society requirements. For that purpose, specialized teachers should promote new courses. Although the number of Diplomates of the EBVS has significantly increased since the last EAEVE Visitation, and three residency programmes are currently running, it would be desirable to set up new ones. Actually, there are new members of the Ictiopathology College, and some others are applying to different Colleges. It should be desirable to implement in a near future a programme in other veterinary specialties to enhance new proposals in other specializations.





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

FVZ has a culture of QA and continuous improvement of quality as it has an Internal Quality Management System (from now onwards IQMS) that is responsible for monitoring and supervising the student learning outcomes and processes during the whole degree. The IQMS function is based on several coordinating bodies and instruments, based on the Organization and Quality Management Regulation of Masters and Degrees available on the Unizar website: https://zaguan.Unizar.es/record/48144/files/Texto_refundido.pdf and FVZ website <https://veterinaria.Unizar.es/organizacion/calidad-titulaciones>.

The Veterinary Degree has three fundamental bodies for the proper functioning of the IQMS:

- **The Coordinator of the degree:** responsible for the management, coordination and enhancement of the degree and aims to ensure the more suitable application of what the Verification Report states. It also secures the assessment and continued improvement of the execution stipulated on the IQMS. (More information on: <https://estudios.Unizar.es/pagina/ver?id=4>).
- **The Quality Assurance Committee:** is responsible for the QA of the degree regarding planning, organization, teaching and assessment. It ensures the coordinator actions proper execution and approves the modification and improvement proposals. It reports directly to the Faculty Council. (More information on: <https://estudios.Unizar.es/pagina/ver?id=3>).
- **The Degree Assessment Committee:** reports an annual assessment of the degree to the Quality Assurance Committee to be approved or declined. (More information on: <https://estudios.Unizar.es/pagina/ver?id=5>).

There is a commission that **collects and analyses the information** and another one that **uses the relevant information for the effective management of the programmes**, being the coordinator the main link between them.

The Degree Assessment Committee includes eight members: two full time teachers, three students, an active external professional veterinarian, an external quality expert and the coordinator as the chairman. The fact that there are 3 students (same number as teachers) on its composition reinforces **objectivity, transparency and impartiality** to the commission.

On the other hand, **The Quality Assurance Committee** is made up of the Vice Dean of Academic Policy as the chairman, two students, academic and support staff representation. It reports to the Faculty Council that must be **regularly acquainted** with the improvement actions taken by the Quality Assurance Committee so that it can be involved on.

The IQMS instruments are mainly three:

The **Verification Report** is the key reference for the organization, coordination and evaluation of the degree and it is supplemented by the **teaching guidelines**, which describe every single aspect of each subject: goals, competencies to acquire, the programme, methods, bibliography, teaching techniques catalogue and academic activities. Both available on the Unizar website <https://academico.Unizar.es/sites/academico.Unizar.es/files/archivos/ofiplan/memorias/grado/salud/veter.pdf> and FVZ website <https://veterinaria.Unizar.es/academico/plan-estudios-grado-veterinaria>.

- **Quality Assessment and Learning Outcomes Report** which is elaborated by The Degree Assessment Committee with information from several subjects, surveys to students and other sources. (See Appendix 10).
- **Annual Innovation and Improvement Plan** which is elaborated by the coordinator and approved by the Quality Assurance Committee, it has to be coherent with the annual Quality Assessment and Learning Outcomes Report addressing the areas of improvement. (see Appendix 11)

The Quality Assessment and Learning Outcomes (<https://estudios.Unizar.es/pdf/informes/2017/informe-es-130-v2.pdf>) and the Annual Innovation and Improvement Plan (<https://estudios.Unizar.es/pdf/planes-mejora/2017/plan-es-130-v3.pdf>) are elaborated annually and are publicly available.

At University of Zaragoza level, there are other committees that guarantee the IQMS: The **Committee of Degree Studies**, the **Technical Commission for Assessment** and the **Quality Commission for Teaching Activity**, which ensures participation and coordination between the FVZ and the UZ.



On the other hand, all the documentation created by the IQMS of the establishment regarding the Degree (the Quality Assessment and Learning Outcomes Report and the Innovation and Improvement Plan), is submitted to the Quality and University Prospecting Agency of Aragon (**ACPUA**; agency which depends on the Government of Aragon) in order to be followed-up and verified.

The renewal of the Veterinary Degree accreditation takes place every 7 years, as it is a 300 ECTS degree. A Renewal Commission for Accreditation is created to elaborate a self-evaluation report; and a visitation to the establishment takes place to verify that requirements are accomplished; that includes interviews with students, professors and stakeholders and a review of a number of subjects. The renewal document of accreditation is available on the Unizar website <https://veterinaria.Unizar.es/organizacion/acreditacion-veterinaria>.

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

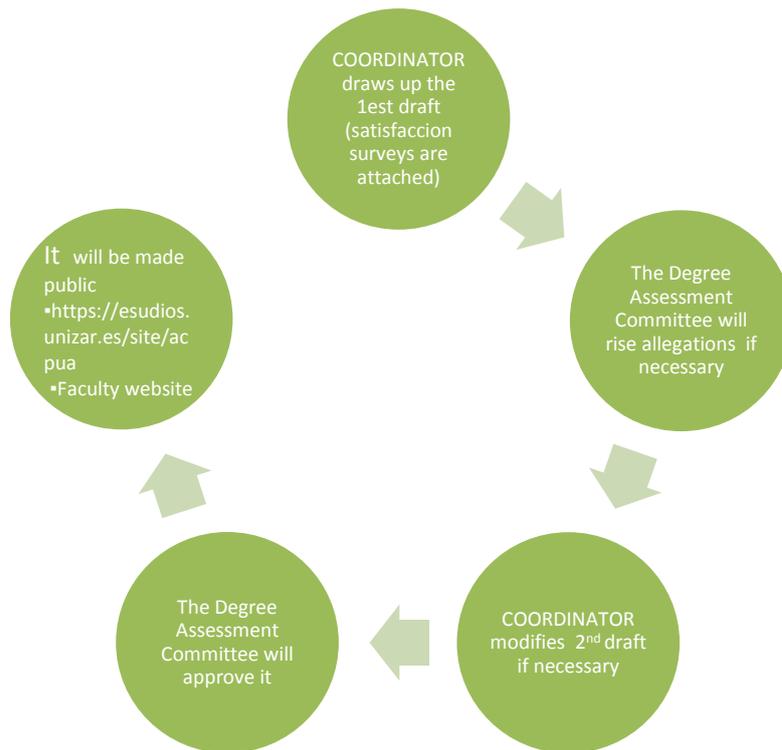
All academic management processes are ruled by the IQMS procedures and are available on the quality tab on the Unizar website <https://estudios.Unizar.es/pagina/ver?id=7> and on the FVZ website: <https://veterinaria.Unizar.es/organizacion/calidad-titulaciones>, and they are organized about three topics:

- Strategic procedures
- Key procedures
- Supporting procedures

The most relevant procedures are:

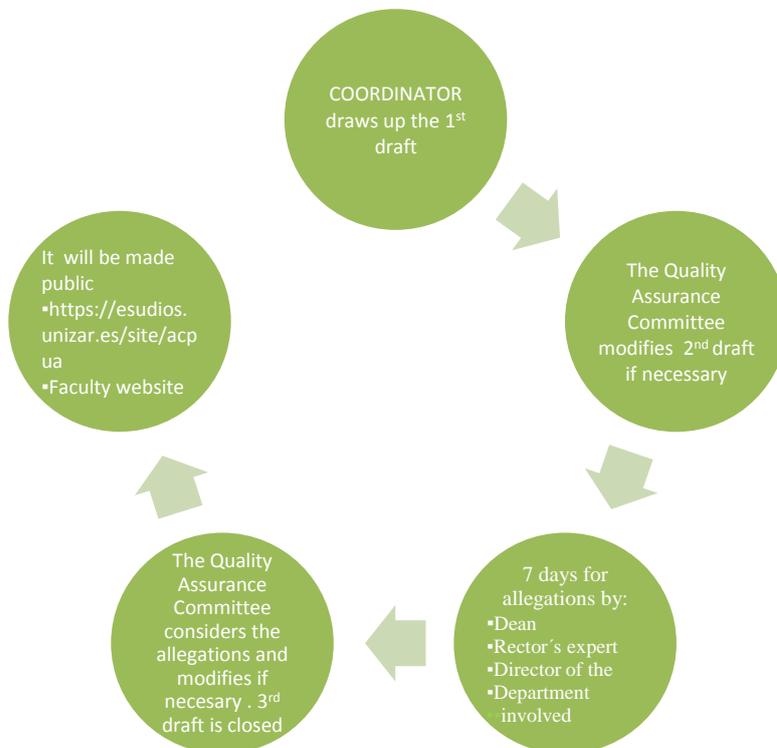
Q212: relating to the elaboration of the Annual **Quality Assessment and Learning Outcomes Report** which is the basis for the academic follow-up of the Degree, carried out by de ACPUA.

Annual Quality Assessment and Learning Outcomes Approval Procedure



Q214: relating to the elaboration of the **Annual Innovation and Improvement Plan**, as the previous one, aims to monitor the proper implementation by the ACPUA.

Annual Innovation and Improvement Plan Approval Procedure



- **Q222:** analysis of **students' satisfaction**. Direct input from students throughout different kind of surveys and meetings held with the students and student representatives. Surveys are publicly available on the Unizar website https://estudios.Unizar.es/estudio/ver?id=130&anyo_academico=2018.
- **Q223:** analysis of the **academic and support staff's satisfaction**; as the previous one, surveys are publicly available on the same website.
- **Q231: suggestions, complaints and allegations** management; forms are at the disposal of teachers, students and support staff on the Unizar website https://estudios.Unizar.es/estudio/ver?id=130&anyo_academico=2018.

By last, all the information regarding to the Coordinator of the degree and the members of the committees are also publicly available on the Unizar website https://estudios.Unizar.es/agente/lista?estudio_id=20180130.

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.

The specific information of the Degree in Veterinary Science that summarizes the Verification Report content is available on the Unizar website: https://estudios.Unizar.es/estudio/ver?id=130&anyo_academico=2018.

The planning of the educational programme and the elaboration of the teaching guides is ruled by the Q316 procedure. Teaching guides are updated annually through the coordinator of the degree and must follow the deadlines established by the Vice-Rector. Changes are done due to the department proposals and must be approved by the quality Assurance Committee. When students got enrolled, the mentioned information is already fully updated.

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

The IQMS describes the University Ombudsman as a QA instrument responsible of taking the more suitable initiatives and procedures to support the various committees linked to the quality management of the masters and PhD programmes.

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

The QA strategy is decided by UNIZAR and supported by the **ACPUA**, as the national regulation, Royal Decree 1393/2007 on the 29th of October, lays down. According to the latter, the QA systems are part of the new syllabus and the basis for new teaching programmes to work efficiently.

Within the general strategy, the FVZ discusses and decides the specific QA improvement actions in the Veterinary Degree. The mentioned actions are approved by the Quality Assurance Committee and the Faculty Council and communicated as explained in 11.1.2. The measures adopted are based on analysis on which external stakeholders have participated, which guarantees a greater **objectivity** and **transparency** as well as a greater **connection** with **society**.

Once the improvement actions are implemented by the Faculty Council, they are revised by the IQMS of UNIZAR and assessed, at regional level, by the ACPUA and at, national level, by the ANECA (National Agency for Quality Assessment and Accreditation) to verify their efficiently accomplishment¹.

¹ The FVZ Degree renewed its accreditation on the 21st of March 2017 given by the ANECA

11.2. Comments

The implementation of a QA system from the requirements of the creation of the European Higher Education Space, has been a very important challenge for the Spanish Universities. The University of Zaragoza has dealt with it in a very reasonable way and with very positive effects for the teaching quality. However, as every cultural change, it needs time. It is especially important the involvement of our students, whose opinion is key for the enhancement of teaching, as well as, a greater implication of the agents involved.

11.3. Suggestion of improvement

A greater coordination between the teachings and students activities would be wanted in a degree like Veterinary with a high number of subjects and practices.

Due to the limitation of the budget, the improvement of the infrastructures requires a continuous attention.

The veterinary degree allows students to access to e PhD studies straight forward as it is a level 3 degree, so, aiming at improving student specialisation, a greater number of PhD studies would be desired.





12.

ESEVT Indicators

12. ESEVT INDICATORS

12.1. Factual information

Raw data from the last 3 full academic years		Year -1	Year -2	Year -3
1	n° of FTE academic staff involved in veterinary training	205	203	209
2	n° of undergraduate students	804	780	773
3	n° of FTE veterinarians involved in veterinary training	185	182	188
4	n° of students graduating annually	141	142	132
5	n° of FTE support staff involved in veterinary training	95	99	95
6	n° of hours of practical (non-clinical) training	834	836	830
7	n° of hours of clinical training	690	710	715
8	n° of hours of FSQ & VPH training	220	220	228
9	n° of hours of extra-mural practical training in FSQ & VPH	130	130	130
10	n° of companion animal patients seen intra-murally	13260	14318	13989
11	n° of ruminant and pig patients seen intra-murally	325	277	250
12	n° of equine patients seen intra-murally	262	141	164
13	n° of rabbit, rodent, bird and exotic patients seen intra-murally	250	250	250
14	n° of companion animal patients seen extra-murally	50	50	50
15	n° of individual ruminants and pig patients seen extra-murally	640000	700000	650000
16	n° of equine patients seen extra-murally	250	250	250
17	n° of visits to ruminant and pig herds	170	175	170
18	n° of visits of poultry and farmed rabbit units	70	70	70
19	n° of companion animal necropsies	239	234	200
20	n° of ruminant and pig necropsies	515	467	450
21	n° of equine necropsies	11	21	10
22	n° of rabbit, rodent, bird and exotic pet necropsies	313	360	320
23	n° of FTE specialised veterinarians involved in veterinary training	16	20	20
24	n° of PhD graduating annually	36	21	25

		FVZ	Minimum	Median	Balance
Calculated Indicators from raw data		Values	Values	Values	
I1	n° of FTE academic staff involved in veterinary training / n° of undergraduate students	0.262	0.13	0.16	0.136
I2	n° of FTE veterinarians involved in veterinary training / n° of students graduating annually	1.337	0.59	0.87	0.748
I3	n° of FTE support staff involved in veterinary training / n° of students graduating annually	0.696	0.57	0.94	0.130
I4	n° of hours of practical (non-clinical) training	833.333	595.00	905.67	238.333
I5	n° of hours of clinical training	705.000	670.00	932.92	35.000
I6	n° of hours of FSQ & VPH training	222.667	174.40	287.00	48.267
I7	n° of hours of extra-mural practical training in FSQ & VPH	130.000	28.80	68.00	101.200
I8	n° of companion animal patients seen intra-murally / n° of students graduating annually	100.161	42.01	70.48	58.152
I9	n° of ruminant and pig patients seen intra-murally / n° of students graduating annually	2.053	0.46	2.69	1.589
I10	n° of equine patients seen intra-murally / n° of students graduating annually	1.366	1.30	5.05	0.068
I11	n° of rabbit, rodent, bird and exotic seen intra-murally / n° of students graduating annually	1.807	1.55	3.35	0.262
I12	n° of companion animal patients seen extra-murally / n° of students graduating annually	0.361	0.22	6.80	0.138
I13	n° of individual ruminants and pig patients seen extra-murally / n° of students graduating annually	4795.181	6.29	15.95	4788.886
I14	n° of equine patients seen extra-murally / n° of students graduating annually	1.807	0.60	2.11	1.212
I15	n° of visits to ruminant and pig herds / n° of students graduating annually	1.241	0.55	1.33	0.694
I16	n° of visits of poultry and farmed rabbit units / n° of students graduating annually	0.506	0.04	0.12	0.461
I17	n° of companion animal necropsies / n° of students graduating annually	1.622	1.40	2.07	0.222
I18	n° of ruminant and pig necropsies / n° of students graduating annually	3.451	0.97	2.32	2.480
I19	n° of equine necropsies / n° of students graduating annually	0.101	0.09	0.30	0.008
I20	n° of rabbit, rodent, bird and exotic pet necropsies / n° of students graduating annually	2.393	0.69	2.05	1.700
I21*	n° of FTE specialised veterinarians involved in veterinary training / n° of students graduating annually	0.135	0.06	0.20	0.072
I22*	n° of PhD graduating annually / n° of students graduating annually	0.198	0.09	0.15	0.110

12.2. Comments

The raw data used for calculating indicators belongs to a complete period of the new syllabus of the degree (2016-2017-2018).

The new syllabus implemented in 2010/2011 includes a distribution of contents suitable for the acquisition of all the veterinary profession competences.

Advantages of this new syllabus includes:

- Significant increase in training on clinical sciences.
- Increase in the number of farms where our students can develop extra-mural practical training.
- Increase of hands-on practice.
- Increase transversal competences through the Undergraduate Dissertation.

The establishment sounds happy with the hours of practical clinical and no clinical training. This new syllabus has added a lot of practical training that were insufficient in the previous degree (2006). Spanish experience in extra-mural practical training in FSQ & VPH, and in special the Veterinary Faculty of the University of Zaragoza ensures a great qualifications of the students, in fact they are used to spend 2 to 5 years in United Kingdom after finalizing the degree playing a great role in the slaughterhouses. We are also proud of the extra mural practices developed in several teaching farms.

The ESEVT recommends counting as one single patient an animal attended during a year, except if it has been treated for a different clinical episode. Our data system does not allow to differentiate if a visit is due to the same or a different condition. Nevertheless, bearing in mind that the same patient comes for different specialities we have counted the number of visits in small animals.

In addition, the number of FTE veterinarians involved in veterinary training is higher than recommended.

The ESEVT indicators are overall positive, and globally reflect the efficient activity of FVZ and effort to provide hands-on practical skills to its students.

12.3. Suggestion of improvement

The ESEVT indicators are overall satisfactory, and globally reflect the efficient activity of the FVZ.

However, as the rest of Veterinary Establishments in Spain, we consider that it is necessary to extend the duration of the Degree to an additional semester. This would allow improving the student training without increasing the already high on-site learning of the current syllabus.

Glossary

ACPUA: Quality and University Prospecting Agency of Aragon.
ADD: Teaching Digital Ring.
AEAG: Anatomy, Embryology and Animal Genetics Department.
BOA: Aragon Official Bulletin.
BOE: Spanish Official Bulletin
BSE: Bovine Spongiform Encephalopathy
BUZ: University of Zaragoza library network
PACA: Animal Production and Food Science
EAEVE: European Association of Establishments for Veterinary Education
EBVS: European Board of Veterinary Specialisation
ECOVE: European Committee on Veterinary Education
EPT: External Practical Training
ESEVT: European System of Evaluation of Veterinary Training
EvAU: University Access Exam
FSQ: Food Safety and Quality
FTPP: Food Technology Pilot Plant
FVE: Federation of Veterinarians of Europe
FVZ: Veterinary Faculty of Zaragoza
HACCP: Hazard analysis and critical control points
IA2: Agro-food Institute of Aragon
IC: Intensive Care
ICE: Institute for Education Sciences
IQMS: Internal Quality Management System
IT: Information Technology
LOU: University Organic Law
M: Media
MECES: Spanish Framework for Qualification for Higher Education
OCW: Open Course Ware
OIE: World Organisation for Animal Health
PAIM: Annual Innovation and Improvement
QA: Quality Assurance
RUCT: Register of Universities, Centres and Degrees
SCRUM: Small ruminant medical service.
SEA: Animal Experimentation Service
SER: Self Evaluation Report
SOP: Standard Operating Procedure
SWOT: Strengths, Weakness, Opportunities, Threats
TFG: Undergraduate Dissertation
UPRL: The Prevention and Occupational Risk Unit
UZ: University of Zaragoza
VPH: Veterinary Public Health
VTH: Veterinary Teaching Hospital
W: Wi-Fi coverage
WA: Wheelchair access

List of appendices

Appendix of the Teaching Guidelines

Appendix 1: Criteria used for the budget allocation for centres and departments.

Appendix 2: Self-evaluation sheet review.

Appendix 3: List of companies that have an agreement with the School to perform the EPT.

Appendix 4: Compulsory form for practice sessions and research work in labs and workshops.

Appendix 5: Compulsory form for the use of animals in practical teaching.

Appendix 6: FVZ Open courses in the Open Course Ware (OCW) platform.

Appendix 7: FVZ video collection.

Appendix 8: List of Teacher´s Innovation Projects.

Appendix 9: Research groups of the FVZ.

Appendix 10: Data for the elaboration of the Quality Assessment and the Learning Outcomes.

Appendix 11: Annual Innovation and Improvement Plan (2010-2018).



FACULTAD DE VETERINARIA



Universidad Zaragoza