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**REPORT ON THE VISIT TO THE FACULTY OF VETERINARY MEDICINE, UNIVERSITY  
OF ZAGREB, CROACIA**

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## INTRODUCTION

The University of Zagreb was initially founded in 1669 with a decree by King Leopold I, and finally established in 1874 when the 3 faculties of Theology, Philosophy and Law were open. It now consists of 29 faculties, three Art Academies and the University Centre for “Croatian Studies”, with close to a total of 8.000 teachers and more than 72.000 students. The Faculty of Veterinary Medicine at the University of Zagreb (FVMZ) was established soon after the 1918 collapse of the Austro-Hungarian empire (which had until then blocked any such development in Croatia) and it is now getting closer to celebrating its first 100 years since its foundation in 1919. The FVMZ is currently the only institution of higher education providing undergraduate and post-graduate training in Veterinary Medicine in Croatia. Its veterinary curriculum underwent its first revision in 1997 and a second, more significant updating process was started soon after the first EAEVE evaluation in 2002, leading to the introduction of a new 6-year, 3-track (small animals, large animals and public health) curriculum in 2005. In the current UZ Students’ Guide the veterinary medical curriculum is referred to as having the so-called BaMa structure (a Bachelor degree half way through followed by a Master’s degree at the end); however, there is no mention in the SER of a Bachelor degree being awarded to undergraduate students at the FVMZ, and the only diploma awarded by the FVMZ is a DVM degree. All courses are taught in Croatian, with the student population being exclusively a national one.

Since 2002, the FVMZ received quality assessment visitation from a number of national bodies, such as the National Council for Higher Education (undergraduate curriculum, 2004), the National Agency for Science and Higher Education (postgraduate studies, 2008) and the Croatian Accreditation Agency (with 6/17 laboratories being accredited, 2010 - see page 8 of the SER).

During the years 2005-2007 the organization of the Faculty was changed and the very high number of departments (29) has now been incorporated into 4 divisions (Basic Sciences, Animal Production, Public Health and Clinical Sciences). In 2007 the record keeping system of the Clinics was fully computerized, and the FVMZ received a donation of 100 hectares of agricultural land in Dugo Selo (25 Km North East of Zagreb) for the establishment of a Faculty farm.

In 2008 the Moodle system was installed on the FVMZ server, and a questionnaire-based quality control system for teacher evaluation was introduced. Between 2009 and 2011 a new Faculty Statute was adopted, the Student Office was established and a rabies vaccination program was started for undergraduate veterinary students from the 3<sup>rd</sup> year onwards.

A sum close to 6.500.000 euros – coming through the University of Zagreb from State and Zagreb City loan funds (73%) and FVMZ’s own revenues (27%) - was invested in a) building the Clinic for Infectious Diseases (which includes a new isolation facility), b) building access road and infrastructures for the Dugo Selo farm area, c) refurbishing buildings and surrounding areas on Campus, d) renovating lecture halls and e) buying new equipment. A long and very detailed list of new equipment can be found on pages 13-14 of the SER. The Introduction section of the Zagreb SER is extraordinarily long and meticulous; although length may not be a problem in itself, redundancy certainly is (part of the information is featured also in subsequent chapters) as it may cause some important things to end up being hidden by other less important items.

Despite this, the SER was very informative, the visit was extremely well organized and every Faculty member was very open and transparent when further information was needed. The Team was treated extremely well, the hospitality was excellent and the atmosphere was always very friendly and pleasant.

## 1 OBJECTIVES & STRATEGY

### 1.1 Findings

Major objectives of the FVMZ are briefly summarized in the SER and more clearly formulated in the 2012-2017 FVMZ Strategic Plan (SP) which can be found at <http://www.vef.unizg.hr/en/legislation.php?a=j&m=ffff0>. The Mission of the FVMZ is represented by a number of objectives divided into what veterinarians should be able to accomplish (page 10 of the SP) and what the Faculty itself should accomplish (page 16 of the SP). The Vision of the FVMZ is reported (page 18 of the SP) as a list of ideal and rather generic targets (reach excellence in teaching, research, professional work etc.) with no reference to a time frame. One remarkable target of the FVMZ is to start a parallel veterinary curriculum taught entirely in English. A SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) done by the FVMZ while developing the Strategic Plan forms the basis for the list of strengths and weaknesses reported at the end of Chapter 1 of the SER.

### 1.2 Comments

The FVMZ must be commended for having developed a 5-yr Strategic Plan (something which several well established Veterinary Faculties in Europe have not accomplished yet) for the first time in 2012. Maybe some lack of experience in developing such documents is reflected by the fact that objectives are lumped together and not prioritized, some concepts are repeated and some are missing and apparently there is no method for their periodic review or for assessing their achievement. The training of veterinarians in Croatia is only briefly referred to, with no mention of the importance of enabling students to: (i) work independently as practitioners with domestic animal species; (ii) promote animal and human health; (iii) safeguard the quality of food of animal origin. Furthermore, there is no mention of two other important aspects, i.e. the fact that veterinary students should be trained to:

- Produce research, innovation, and development of critical thinking in the various disciplines of veterinary sciences (including basic veterinary sciences, animal sciences, veterinary clinical sciences and veterinary public health).
- Fulfill the needs and expectations of our society by providing services to the public.

Fulfilling public needs refers to providing consultations to public and private bodies and enterprises on both the major (animal diseases, animal welfare, food safety, veterinary public health) as well as minor (but not less important) issues facing our profession such as veterinary education, veterinary specialization, veterinary economics, European veterinary legislation etc. Although the FVMZ is active in many (but not all) of these fields, its Strategic Plan document probably fails to point that out to its students, faculty members as well as (and perhaps more importantly) the public and stakeholders in general the importance of its role.

Vision refers to the capacity of looking into the future and getting a perspective of what will be our reality in 10, 20 or 50 years, and through this being capable of anticipating what a changing society will need from our profession as well as foreseeing potential crisis or future developments of the veterinary profession. As such, a vision statement is not present in the SER or on the Faculty web site. The list of strengths and weaknesses of the SWOT analysis is fairly elaborate but is missing some important items both as strengths (i.e. the work the FVMZ is doing on game animals and on bees) as well as weaknesses (i.e. the teaching hospital being fragmented into several clinics with no centralized management).

Unless goals are set and intermediate targets and check points in time are established, the value of a Strategic Plan (whose benefits may become particularly evident when difficult times come such as during a financial crisis) will be very limited.

A stronger emphasis on research and teaching should be present in the Strategic Plan. The FVMZ has invested a lot in terms of time and energies in revising the curriculum but not as much has been done in elaborating strategies to stimulate high quality research. Also, an assessment of learning outcomes of the new curriculum based on the changing needs of the veterinary profession should be done by sending out a survey to FVMZ alumni. This will help assessing the impact of the current curriculum and revising it in the future.

It is the opinion of the team, that the requirements regarding Objectives & Strategy as they are laid down in Annex I of the SOP are met.

### 1.3 Suggestions

- **The team acknowledges the Faculty for the development of the Strategic Plan 2012-17 however, the mission objectives are not well defined or prioritized; it has also some limitations for the need of a stronger emphasis on teaching and research as well as setting goals, intermediate targets and check points in time.**
- **It would be advisable to include in the next Strategic Plan Committee a representative of the stakeholders (students, animal owners/breeders, pharmaceutical companies, animal feed industries etc.)**
- **For a better adaptation of the objectives of the FVMZ to the society requirements, the FVMZ could develop a survey to be sent to all veterinarians from or working in Croatia to assess the changing needs of the profession.**

## 2 ORGANISATION

### 2.1 Findings

The University of Zagreb is under the control of the State Agency for Science and Higher Education (SASHE). Study programmes are proposed by faculties approved by the UZ Senate and accepted as they are by the SASHE which then approves their financing from the State Budget. There are no current restrictions imposed on student intake by the State, although there are financial and human resource constraints at the Faculty level.

Similarly to most other European Universities, the UZ is headed by a Rector who is helped by 5 Vice-Rectors (study programmes & students, research & technology, financing, international & legal affairs, and spatial planning & inter-institutional cooperation). The Rector and the Vice-Rectors form the Rector's Collegium that is extended to the enlarged Rector's Collegium by seven representatives from the Field councils and one student representative. The enlarged Rector's Collegium discusses the issues and assists the Rector in decision making. The Senate has 70 members, roughly 2/Faculty, one of which is normally the Dean. Rectors are voted by the Senate for a maximum of 2 consecutive 4-yr terms. The 29 Faculties of the UZ are grouped in 6 Councils who have a limited decision making power but serve as discussion bodies in their monthly meetings. The Veterinary Faculty is included in the Council for Biomedicine (see scheme 1 on page 36 of the SER for clarification).

While the Bologna system (Bachelor-Master) is present at the UZ, the Veterinary Curriculum only offers a 360-ECTS DVM degree. National postgraduate specialization courses (60-120 ECTS) last 1-2 years, and PhD courses last 3 years (the UZ dictates the number of ECTS).

No major differences in management exist between the FVMZ and other veterinary teaching establishments in Europe. The FVMZ is headed by a Dean who is elected by the Faculty Council for a maximum of 2 consecutive 3-yr terms. The Dean is helped by 4 Vice Deans

(Education, Finances, Quality Control & Continuing Education, Science & International Cooperation), who are elected by the Faculty Council, and a Faculty secretary. The Faculty Council is composed by all members of the teaching staff, 20 members elected among associate employees and a maximum of 15% of students.

The dean has, among her/his representative and political tasks, also the responsibility to present an annual report (including a budget plan) to the Faculty Council and the Rector.

The Faculty is in charge of overseeing all departmental activities making sure that stakeholders expectations are properly met particularly (but not only) with regard to its undergraduate training program. Formal responsibility for academic education, research and services to clients lies within the 29 FVMZ Departments. Departments can be very small in terms of number of staff members (even 3-4 members) so they could be more equivalent to teaching units than to Departments. Each Department has a Head and a Secretary, although smaller departments share secretarial personnel.

The veterinary profession and the general public are not involved at any stage in the decision-making process or even for consultation. However, the FVMZ may ask its stakeholders for advice, particularly when new developments are being discussed.

## **2.2 Comments**

Albeit the FVMZ might appear fragmented when looking at the number of Departments, this does not appear to be a problem as the degree of collaboration and sharing resources and equipment among teachers of different departments is very good. However, if the FVMZ is concerned about its perception in the international arena, it should consider changing the terminology used to define groups of academicians working in the different disciplines: the accepted meaning of the term “department” in the European culture refers to a large number of staff members working in an area of science which is fairly broad. From a European perspective, the term Department might be better used to indicate the Divisions of the FVMZ. There is certainly nothing wrong with the use of the term “department” to indicate a group of 3-4 scientists, but it should be considered how this would inevitably convey the idea of fragmentation and division in the majority of newcomers from European academia.

It is the opinion of the team, that the requirements regarding Organisation as they are laid down in Annex I of the SOP are met.

## **2.3 Suggestions**

- **The University of Zagreb should consider having a Vice-Rector exclusively dedicated to Quality Assessment.**
- **At Faculty level, the team recognizes that organization in Divisions simplified the management but it is still necessary to group the 29 Departments in bigger teaching units accordingly to some criteria of homogeneity of the disciplines.**

## **3 FINANCES**

### **3.1 Findings**

The FVMZ receives the majority of its funding through the UZ from the government. State money has been decreasing over the last few years due to the post-war effects and the

financial crisis, and as a consequence a big chunk (>90%) of state funding received by the UZ is actually used to pay for salaries. What is left after salaries is no longer sufficient to pay for all operational costs, maintenance of buildings and equipment, so the FVMZ has to contribute with its own income generated internally through research and the provision of services to the public. The FVMZ has tried to look at ways to generate more funding: based on their 2012-2017 Strategic Plan (SP) they intend to increase the amount of money generated by services and research projects so as to maintain their current budget; also, they aim at increasing their annual budget by incrementing the part generated by services and research up to 25% of their (current) annual budget over the next 4 years.

A breakdown of the income and expenses in euro from 2010 to 2012 is detailed in tables 3.1 and 3.2 on page 56 of the SER. A rather drastic change in the allocation of State budget is expected in the near future, with the introduction of the so called “Lump Sum system”, through which a lump sum will be allocated to each Faculty with Deans being responsible for its use and having to produce a yearly budget. There is a fear that such a system will be characterized by a substantial decrease in the amount of State funding.

As far as the costs to the students are concerned the Croatian system of higher education is partly subsidized, as the first 45 students study for free and then there is a linear increase in annual fees from 20 euros paid by the 46<sup>th</sup> student up to 1250 euros paid by the 130<sup>th</sup> student. As of 2013 the FVMZ has decided to increase their student intake to 150/year. All the income derived from student fees goes to the FVMZ. Income derived from services to clients is split in 72% to the Department which provides the service and 28% to the Faculty, with no levy for the University

### 3.2 Comments

The Faculty must be commended for its effort in producing a SP which addresses potential problems due to a possible curbing in state funding.

The level of funding appears to be adequate based on the relationship between running costs and expenses, and the FVMZ appears to have a fair amount of autonomy in the allocation and use of its budget. However, any decrease in the amount of funding might negatively affect the capacity of the FVMZ to maintain an adequate level of teaching. Criteria for allocating budget to each Faculty within the UZ are based on a number of different criteria, but a coefficient needed to adjust for the higher cost of veterinary education (due to costs of feeding and maintaining teaching animals at the Vet School, maintaining an animal farm, moving students from the Faculty to different premises for their practical training etc.) appears to be missing. Such a coefficient is present in most if not all European Veterinary Faculties, and it is of vital importance in maintaining an adequate level of teaching quality in veterinary medicine.

Although the increase in student number will increase the Faculty income, every change in the number of 1<sup>st</sup> year students has to be approved by the University, and there are limitations due to a ratio N° of students/N° of teachers which the UZ has no control over and which seems to make it difficult for the FVMZ to use it as a way to increase their annual income in the future.

It is the opinion of the team, that the requirements regarding Finances as they are laid down in Annex I of the SOP are met.

### 3.3 Suggestions

- **A coefficient to account for higher costs of veterinary education should be introduced at the University of Zagreb level when allocating budget to different faculties.**

## **4 CURRICULUM**

### **4.1 GENERAL ASPECTS**

#### **4.1.1 Findings**

The new curriculum started in the academic year 2006/2007 and was renewed in 2009. It is aligned with the Bologna process (ECTS system, graduation after a six-year single-cycle graduation course and then PhD). The course has been accredited by Ministry of Science Education and Sports since 2005, through the National Council for Higher Education. The overall curriculum is determined by law (Law on Academic and Professional Titles and Academic Degree) and Rector's Conference in the actual arrangement. It has been frequently amended with minor changes between 2005 and 2012 and the implementation of all these changes was in the academic year 2012/2013. Minor changes (syllabus or program content) are allowed up to 20%, in order not to alter curriculum, final competencies and qualification.

The new curriculum has been changing gradually in order to harmonize with EAEVE standards. It is the opinion of the team that it fulfils the EU directive 36/2005 as integrated programme (Integrated Undergraduate and Graduate University Study of Veterinary Medicine) in one educational cycle of six years. The study is a combination of basic subjects, preclinical and clinical veterinary subjects, giving a broad education in Veterinary Medicine, and providing day-one skills certified after a process of evaluation. The curriculum provides core subjects and electives (type 1, compulsory within the study track chosen, and type 2, taken as free choice). Actually, it is divided into three study tracks that are chosen from the 10<sup>th</sup> semester, upon enrolment in 5<sup>th</sup> year: Small Companion Animals, Farm Animal & Horses and Veterinary Public Health. The 12<sup>th</sup> semester is free of theoretical subjects. Attendance to all forms of teaching is obligatory, but a number of excused absences are allowed: 50% of theoretical teaching, 30% of practical work. For clinical rotations during night-shift duty and extramural work 100% of attendance is required.

The main innovations of the new curriculum are: increase of supervised practical and clinical training, introduction of interactive teaching and learning, case-study analysis, problem solving directly from practices, guest lecturers, use of modern teaching technology, independent research, cooperative learning.

Upon graduation the Faculty issues a single document, "Single diploma" as DVM and the "Diploma supplement" that has the same name of the study without specifying the study track but in which also the skills acquired according to the study track are listed. The degree of DVM is obtained after acquiring all credits provided both in the common and the specific track and after a final thesis for a total amount of 360 credits, corresponding to 4935, 4932 and 4932 total hours depending on the 3 study track Small Companion Animals (SCA), Food Animals and Horses (FAH) and Veterinary Public Health (VPH), respectively (see Tables 1 and 2).

Each student undertakes at least 546 hours (8.2% of study time) of obligatory practical extramural work (table 4.5, page 96) and an added amount of hours depending on the track chosen: 19 for SCA, 87 for FAH and 13 for VPH. These activities are carried out by students rotating in small groups. Such a work is held in veterinary organisations and other institutions in the radius of 70 km within Zagreb area, with the exception of Clinical Field Work, carried out all around Croatia depending on the student's residence. In order to allow students to carry out practical extramural works tutored by teachers and under the guidance of external professionals, the FVMZ has signed official collaboration agreements with various outside bodies (annex 1 to chapter 5, page 134).



SUBJECTS	HOURS OF TRAINING (%)	SER
Basic subjects	233 (4.72%)	Table 4.2 and Table 4.2bis
Basic sciences	1137 (23.05%)	Table 4.2 and Table 4.2bis
Clinical sciences	1799 (36.47%)	Table 4.2 and Table 4.2bis
Animal Production	521 (10.56%)	Table 4.2 and Table 4.2bis
Food Hygiene/Public Health	359 (7.28%) <sup>(1)</sup>	Table 4.2 and Table 4.2bis
Professional knowledge	31 (0.63%)	Table 4.2 and Table 4.2bis
Type 1 electives	291 (5.90%) <sup>(2)</sup>	Additional table
Others	502 (10.18%) <sup>(3)</sup>	Table 4.4 and additional table
Diploma work (Final thesis)	60 (1.22%)	Table 4.4 and additional table
TOTAL	4933 <sup>(4)</sup> (100%)	Additional table

**Table n° 1** – N° of hours of training in each subject, and where this information can be found in the SER of the Faculty of Veterinary Medicine, University of Zagreb, Croatia. The Additional Table referred to in the text was provided to the Team by the Faculty during the visit, and is reported below as Table n° 2.

<sup>(1)</sup> According to the new table 4.2 provided by the Faculty, this number includes the hours assigned to FH/VPH area (285) and those assigned to “Preventive medicine” and “Veterinary state medicine and public health” (74). Students can follow three different tracks, one of which is focused on VPH, but also the other tracks are integrated with several topics that should be considered within the area of veterinary public health, according to the EU regulation 854/2004 (animal health, animal welfare, pharmaceutical substances, pre-harvest quality management population dynamics of infection and intoxication, diagnostic epidemiology, animal welfare at the level of production, transport and slaughter, environmental issues related to food production including waste management, principles of the common agricultural policy, market measures); the team verified that students receive a more than sufficient common education in Veterinary Public Health (16.33%), irrespective of the track chosen.

<sup>(2)</sup> Average amount of type 1 elective hours given in the different study tracks (293 in SCA, 290 in FAH, 290 in VPH).

<sup>(3)</sup> Sum of total type 2 electives in each study track (352 hours), Introduction to English Veterinary Medical Terminology I and II (30 hours), and Physical Education and Health (120 hours).

<sup>(4)</sup> Average amount of total hours given to all students in the three study tracks (4935 in SCA, 4932 in FAH, 4932 in VPH).

Curriculum hours in EU-listed subjects	4080
Hours obligatory subjects related to study track + Electives in the study track	SCA FAH VPH
	293 290 290
Hours electives	SCA FAH VPH
Graduation thesis	60
Introduction to English Veterinary Medical Terminology I and II	30
Physical Education and Health	120
Total	SCA FAH VPH
	4935 4932 4932

**Table n° 2** – N° of Curriculum hours in EU-listed subjects at the Faculty of Veterinary Medicine, University of Zagreb, Croatia. Students have to obtain 360 credits in 6 years. This table was provided to the Team by the Faculty during the visitation.

It is the opinion of the team that the curriculum is well balanced and covers all subjects in accordance to directive 36/2005/EC.

As of the academic year 2008/2009 an "Information package" (indicated as the "Student guide per year") is being provided to each student upon enrolment in the following year, which defines the content of syllabi of the subjects in the curriculum. .

Practical (especially extramural) work is planned in a progressive manner, with generic activities at the beginning of the curriculum and then progressively increasing the complexity of activities that are related also to the interest of students, according to the study track chosen, towards the end of the course. Most of extramural work is fully supervised by teachers and monitored through a "Practical work log" in paper form, signed by the professors and practitioners, which is registered in the Student Registry.

It is the opinion of the team that students that in all study tracks have a balanced amount of practical work compared to the theoretical activities.

Self-directed learning was misunderstood in the calculations of the tables. The FVMZ took as self-directed learning the estimation of the number of hours that an average student is using to consult the intranet materials while preparing for practicals, site exams, etc., out of the allocated ECTS in the curriculum, which must instead be considered hours of self-study. Following a request from the team, the FVMZ corrected tables 4.1a, b, c, 4.2, 4.2bis, 4.6a, b, c and ratios R6 to R10 (see new data included in this report).

After the recalculation provided by the Faculty of Ratios R6 to R10, the team verified that Ratios R6 and R7 are better than the EAEVE established range of denominators (see annex 1 of this report). Ratio R8 is within the range established in the SOP.

#### 4.1.2 Comments

The division of the curriculum in tracks seems to allow students to get a relevant amount of theoretical and practical knowledge in their field of interest, almost leading to form quite different professional figures. However, it is clear from the SER that the graduation degree is the same for all students and the track chosen can be figured out by looking at the Diploma Supplement.

The drop-out of students after the first year is a problem pointed out during the visitation. Students who cannot enrol a first-choice degree (Medicine, Dentistry...) enter the Veterinary degree as a second or third choice and stay only 1 year to then go back to their initial choice as soon as possible. This is a clear waste of time and resources for the FVMZ.

The monitoring system through the "Practical work log" has been described but the system seems quite complex, and the documentation of practical activities performed by students is not always available at the FVMZ and not always clear.

#### 4.1.3 Suggestions

- **The team strongly recommends the University of Zagreb to contact the Ministry of Education and Sports to explain the problem of drop-out of students after the first year in the FVMZ, analysing its causes and trying to find out a better solution for all participants.**
- **It would be more effective to implement an easier standard monitoring system and a new standard document-keeping procedure that may allow the FVMZ to demonstrate, analyse and discuss, if necessary, suitability, amount, strength, and efficacy of all practical activities carried out by each student (or group of students).**

## 4.2 BASIC SUBJECTS & SCIENCES

### 4.2.1 Findings

Basic subjects form part of the core curriculum in a total amount of 228.6h (4.44%) of the workload (5152h), Basic Sciences amount 1079.4h (20.95%). The new curriculum has a system of prerequisites regulating access from one year to the following.

Practicals in Anatomy are mainly done using cadavers (cats, dogs, and sheep) and organs or parts of bodies (horses, cattle) fixed in formalin after 2-3 days of washing in fresh water. Fresh materials are rarely used. Regarding waste management (p146), biological waste (carcasses, parts of carcasses, food) is collected in labelled plastic bags stored in the Department of Pathology in a refrigerated chamber (4°C); water from necropsy room follows a cleaning/filtering process before entering the general drainpipe. Chemical residues are stored in containers labelled at the Faculty's chemical waste landfill; infectious material is sent to a collection point next to the new isolation facility. Waste is disposed by a certified company.

Students are introduced to safety measures while working with sick animals, dangerous tools and/or products when starting practicals. Students are vaccinated against rabies from the 3<sup>rd</sup> course when they could have a contact with potentially infected animals.

All candidates for enrolment in the 1<sup>st</sup> year have to pass an exam at a national level (state high school final exam). Students entrance after passing the national exam to gain access to higher education is determined by a 2<sup>nd</sup> set of tests by the FVMZ to verify the knowledge of Croatian language, Mathematics and a foreign language. From 2010 the FVMZ established a mentoring system to support 1<sup>st</sup> year students.

All subjects considered as Basic Sciences in the EU-list are taught. Theoretical training in Basic Subjects (96h) is balanced with practical training (127 h) (corrected Table 4.2, p64). The same applies for Basic Sciences (482 lectures: 655 h practicals).

The FVMZ improved vertical and horizontal integration of subjects; the team verified that basic sciences are now more supportive to clinical sciences. To eliminate overlapping multidisciplinary teachers participate in one subject. Students of preclinical courses have extramural practicals on farms and cattle breeding centres where they become familiar with handling and identification of domestic and wild animals: 29 h in the 1<sup>st</sup> year, 22 in the 2<sup>nd</sup> year and 29 in the 3<sup>rd</sup> year.

Groups are smaller in the new curriculum: lectures up to 150 students, seminars 30, methodical exercises 15, practicals 10, clinical training 6, special clinical training (obstetrics, surgery, internal medicine, radiology) 4 students/teacher.

As it will be stated in more detail in chapter 7, cadavers for use in Anatomy and Anatomical Pathology are sufficient to guarantee hands-on training of the students.

### 4.2.2 Comments

The curriculum includes the major basic subjects and sciences required for veterinary training and the team verified that the most important items of the basic disciplines are taught. Basic subjects (zoology, plant biology, physics and biomathematics) and basic sciences (Physiology, Biochemistry, Pharmacology, Toxicology, Microbiology, Immunology, and Epidemiology) are well oriented towards veterinary medicine. Chemistry is offered at a general, basic knowledge since academic staff and students in the FVMZ agree on the heterogeneous level after secondary school of the incoming students with respect to this topic.

In the new curriculum the total number of hours in Anatomy has been reduced and the teaching focuses on the clinical significance, for instance teaching of locomotor system is oriented towards traumatology and orthopaedics, but the curriculum still offers an applied Anatomy as elective. Anatomy cannot work with fresh materials during practicals because they have not an adequate refrigerator to storage of carcasses or parts of bodies/organs.

It is the opinion of the team, that the requirements regarding Basic Subjects & Sciences as they are laid down in Annex I of the SOP are met.

#### 4.2.3 Suggestions

- **The team proposes the FVMZ to offer a “bridge” course in chemistry and any other basic subject to those students with a low level of knowledge after secondary school; as it occurs in other European Universities, such a course would be organized in one month before starting the first year as intensive training of students who voluntarily enrol; this course would be accountable in the student curriculum as elective ECTS.**
- **The department of Anatomy, Histology and Embryology has to find the way to install a cold-storage chamber (4°C) to allow the use of fresh materials for practicals in Anatomy and avoiding the use of formalin fixed materials.**
- **The elective subject “clinical anatomy” should be integrated in any of the core subjects in Anatomy.**

### 4.3 ANIMAL PRODUCTION

#### 4.3.1 Findings

The FVMZ has no teaching farm. There are some heads of sheep and some goats and 3 cows in the Clinic of Reproduction, and there are 3 or 4 cows in the Clinic of Internal Diseases. These animals are definitively not sufficient to teach students practical work in animal production. However, the majority of teaching in animal production is not done by the clinics, but in the Animal Production and Biotechnology Division by the Department of Animal Hygiene, Environment and Ethology, the Department of Animal Husbandry, the Department of Animal Nutrition and Dietetics, and the Department of Biology and Pathology of Bees and Fish, as well as in the Veterinary Public Health and Food Safety Division by the Department of Veterinary Economics, and Analytical Epidemiology, and by the Department of Poultry Diseases and Clinic. Especially the Department of Animal Husbandry, in cooperation with some of the above-mentioned Departments, expose the students already in the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> semester to farm animals by extramural lessons on 4 farms, with which the Faculty has contracts. One farm is a heifer producing farm, one is a grassland centre, one is a dairy farm with horses and sheep (it is the farm of the Technical High School for Agriculture in the city Križevci), and one is a family farm with diverse species - the “Dzakula family farm” near the city of Sunja keeps Simmental and Hereford cattle, Black Slawonien, Duroc and Landrace pigs, horses, geese, poultry and Merino Landschaf sheep. These farm visits can be regarded as kind of a pre-clinical exposure of the students to handling farm animals and horses.

There is quite a good balance between lectures on animal breeding and production, agronomy and animal nutrition in the faculty (about 40%) and exercises in form of demonstrations during the farm visits (60%) that the Department of Animal Husbandry organises in cooperation with the Department of Nutrition and Dietetics, the Department of Animal Hygiene, Environment and Ethology, as well as with the Department of Veterinary

Economics and Analytical Epidemiology and the Clinics for Internal Medicine and for Obstetrics.

On the premises of the Technical High School for Agriculture in the city of Križevci and at the Dzakula family farm, there are teaching rooms in which the groups of up to 25 students on their one-day visits are first introduced to the activities of the farms such as agronomy, animal nutrition, silage production and especially pasture management for suckling beef cow production with Simmental and Hereford cattle before the students then are led into the stables. In Križevci, during day trips, the students in such big groups cannot really “handle” the farm animals physically, since there are only some horses, some sheep and the suckling cows on the pasture, as well as only some 40 cows for milking. However, in Križevci the students can watch the milking procedure in a small milking parlour for six cows at a time.

At the Dzakula family farm (a fairly large one (>100 ha) compared to the average 10-to-20-ha farms in Croatia), the number of animals and of different animal species is big enough to split the visiting groups of students in a way that every student can get in a much more intensive contact with the animals than in Križevci.

The curriculum of the Department of Animal Hygiene, Environment and Ethology covers teaching of good management practices for animal transportation and certification. All aspects of animal welfare in farm animals are taught in the Department of Animal Hygiene, Environment and Ethology.

#### **4.3.2 Comments**

The pre-clinical exposure of students to handling farm animals should be reconsidered, since more and more students of veterinary medicine have nowadays often no agricultural background at all. The farm visits in the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> semester with up to 25 students per visit are useful for informing students about the “real life” farming with animals, but cannot replace the opportunity of really handling farm animals at a faculty own farm, where small groups of students could even be commissioned with caring for the animals over a certain period of time.

Agricultural economics and rural development are taught by the Department of Veterinary Economics and Epidemiology as electives – part of it should be taught as obligatory subject.

It is hard to judge to which extent the Department of Animal Hygiene, Environment and Ethology covers teaching of good management practices for animal transportation and its certification by components of teaching in forensic and state veterinary medicine.

The practical demonstrations on the four contract farms for visits of FVMZ students are not sufficient for teaching any management knowledge and skills for managing modern animal production units, since all four farms have only very traditional husbandry systems, where the single animal and not the herd or flock is in the focus of the veterinary care.

As for integrating subjects related to teaching animal production such as ailments caused by poor nutrition and herd health management, the four contracted farms for farm visits with students can only demonstrate in single cases of a poor body condition of an animal the effect of malnutrition, and, they cannot at all demonstrate herd health management procedures such as biosecurity, sampling of health monitoring samples at an epidemiologically reasonable scale, and meaningful record keeping of any herd health indicators such as mortality, morbidity, reproduction data etc. This means that especially herd health management is “only” taught in the lecture rooms. Additionally, teaching herd health management seems to be shared between, i.e. seems to be taught by 3 departments: the Clinic of Obstetrics, the Department of Veterinary Economics and Epidemiology, and the Department of Animal Hygiene, Environment and Ethology. It is hard to judge to which extent the merely theoretically teaching in herd health management is coordinated between the three institutions.

There is no general concept at the FVMZ of a biosecurity strategy that covers a disinfection device for incoming vehicles with animals to the clinics, for outgoing vehicles and for isolating the FVMZ premises in case of the occurrence of a notifiable disease in one of the clinics. This lack of an overarching biosecurity strategy applies also to all farm visits with students and to the ambulatory clinic. In consequence, there is no sufficient teaching of biosecurity as a basic precondition for a good herd health management.

The explanation for not visiting intensive pig production units (“...they do not allow us to enter the units with students for biosecurity reasons...”) suggests that the FVMZ does not really convince the owners of such units that a well-managed biosecurity procedure such as shower-in and complete change of clothes is capable of keeping any dangerous pathogen out of the unit in question.

It is the opinion of the team, that the requirements regarding Animal Production as they are laid down in Annex I of the SOP are NOT met and that **this may warrant a Major Deficiency**.

#### 4.3.3 Suggestions

- **The Faculty should consider the establishment of a Faculty farm to improve pre- and clinical exposure of students to farm animals. The FVMZ should consider establishing a holding of farm faculty-owned farm animals (ideally a teaching farm), where students can handle healthy animals and even take responsibility for their care. An option would be to change the contract with the Dzakula family farm (which has already rooms for students that choose to stay longer on the farm) so that the capacity of hosting student groups would only be offered to the FVMZ, instead of also to agronomy students. In this case it would be possible to offer one- or two-week stays of groups of 4 to 5 FVMZ students that are especially interested in farm animal practice on a farm with several farm animal species and a farm owner that is himself a veterinarian and graduate of the FVMZ.**
- **Training should be improved by exposing the students to modern production units since they are almost exclusively in contact only with very traditional husbandry systems. The FVMZ should negotiate with some modern animal production farms the biosecurity measures that would allow for visits of student groups in such units without threatening the herd health of such units, which would provide both insights into modern animal production techniques and into efficient biosecurity measurements**
- **Very important procedures related to Health Herd Management such as biosecurity, epidemiology, record keeping, reproduction indexed, etc., should be taught during practicals and not only in the lecture rooms.**
- **The Faculty MUST develop a biosecurity strategy for the Faculty premises, the clinics, the ambulatory mobile clinic and the farms to ensure appropriate protective measures for the staff and students, disinfection of premises and vehicles and good isolation protocols for patients with infectious diseases, as well as a contingency plan to deal with any outbreak of notifiable diseases, zoonoses or emerging disease. The FVMZ should develop a contingency plan for any case of the occurrence of dangerous infections such as notifiable diseases and/or zoonoses at the premises of the Faculty, as well as nominating a staff member that is responsible for instructing all clinics and all departments that are doing farm visits. Teaching of biosecurity should be coordinated between all appropriate departments including the ambulatory clinic.**

## 4.4 CLINICAL SCIENCES

### 4.4.1 Findings

Practical training of students in the FVMZ is not organized under a Teaching Hospital structure but as independent Clinics in separated buildings. Clinical practicals are performed in the Faculty clinics or in private clinics and farms. Students carry out inspection and simple interventions on farm teaching and outside food-producing patient care during ambulatory clinic. Students must participate in emergency service and are obliged to follow a total of 51h on night duties (3 nights).

The Department of Parasitology and Parasitic Diseases took into consideration the last EAEVE recommendations to improve both organization and teaching. Human resources are adequate for the amount of teaching.

The internal diseases' department looks to be very united and positively driven and the case-load is more than satisfactory.

*In Diagnostic imaging*, the case-load for small animal patients is adequate. The facility should be urgently renovated (see 6.6.2). The lack of computer-tomography is a major draw-back for diagnostic efficacy, service to the community and recognition of the diagnostic imaging unit.

The amount of compulsory teaching dedicated to Physiotherapy is unique in Europe and shall be acknowledged. With 150 cases a year, the case -load is more than adequate. Also the premises are absolutely adequate.

The case-load in Surgery is largely sufficient for the number of students. Student-oriented teaching (Case based teaching/Problem based learning) has been implemented under cooperation with US universities. Surgery shall be acknowledged in particular for having the lack of on-site Diplomates being compensated by having one professor on an EBVS alternate residency program and an assistant on an American residency program. Besides, the clinic for surgery shall be acknowledged for running a master program in surgery for Croatian veterinarians and training session for human surgeons facilitating translational research.

The case load in the Clinic for Gynaecology and assisted reproduction is low but this is compensated for by the use of models and cadavers. Further practical experience is then gained with the ambulatory clinic and during Extra Mural Studies. The lecturer in the Equine clinic is enthusiastic, ambitious and wishes to develop the facility to its full potential. The case load is still inadequate but is increasing very quickly and will soon reach adequate levels.

This small Avian and Reptile clinic unit works in an efficient manner with sufficient resources. Besides patients, birds are being kept on-site and contracts with companies have been signed in order to improve students' training.

The ambulatory clinic is represented by 13 veterinary organizations. In addition students are being exposed to cattle farms through the Herd Health training. The Clinical field work is held in cooperation with many other private practices. A Handbook for Extramural training has been issued for this matter; this needs to be acknowledged. Another kind of practical training is the Professional Clinic Work divided in 3 parts: the night duties in the clinics, the training in the Croatian Veterinary Institute and the practicals in the Ministry of Agriculture premises. Altogether the allocated hours for clinical training seem adequate and most importantly, hands-on training seems to be prioritized.

The clinics provide practical experience with cattle now that there is no first opinion practice and no animals close to Zagreb. The extramural clinical training of students in groups of four is responsive to the picture presented by the practitioner when they arrive and provides a broad range of technical challenges.

The extra-hours in the clinics (from 4pm to 8am) are organized in a rotational manner involving clinicians of many different departments. Students must rotate to complete 15 hours on night duties in the 8<sup>th</sup> semester and 36 hours in the 12<sup>th</sup> semester; students have the possibility to dedicate more hours on night duties on a voluntary basis.

The overall clinical curriculum is adequate. Hands-on training is encouraged by all means although the case-load in some clinics should be improved: Gynaecology (large and small animals) equine (internal and surgery). Case based teaching/Problem based learning has been implemented already in some clinical departments.

There are no premises for a centralized emergency clinic and Intensive Care Unit.

#### 4.4.2 Comments

Case follow-up is difficult for the students because of the patient data system. Students cannot open and fill out a clinical record and are not allowed to make any changes to a patient file without a supervisor.

The ambulatory clinic fails to deliver modern herd health teaching.

Case based or Problem based teaching should be implemented in as many clinics as possible. Clinical training can also be improved by training on models. For this purpose, a centralized Skill laboratory should be implemented.

The major draw-back in Internal Diseases Department is the inadequacy between case-load, work-load and human resources. As a matter of fact, there are only 10 technical Staff members for 21 veterinarians. Secretary and permanent front-desk position are missing.

Cooperation between Surgery and Gynaecology should be reinforced.

Radiographic diagnostics must be available for the equine staff in order to demonstrate the student's clinical diagnosis. It is unwise to walk horses to the radiography section to have radiographs taken in the open air. This is both a hazard and also fails to provide timely radiographs for the clinicians. Unless the students are motivated they will not witness diagnostics such as equine scans and regional anaesthesia.

The students have to travel for long periods in a bus and are unable to be proactive to the disease situations on the farms. Because the clinic does not supply the medications or follow the progress it is hard to see how the students can see the consequences of their interventions. Without monitoring the conditions it is also hard to evaluate the economic effects of their opinions. There was no evidence of bio-security on the farm.

Premises for a centralized emergency clinic and Intensive Care Unit should be implemented in order to save material and human resources.

It is the opinion of the team, that the requirements regarding Clinical Sciences as they are laid down in Annex I of the SOP are met.

#### 4.4.3 Suggestions

- **Altogether the allocated hours for clinical training are adequate for the number of students and hands-on training is prioritized however, the case-load in some clinical services such as Gynaecology and Horse Clinic should be improved by marketing.**
- **In order to secure the ambulatory clinic long term contracts with local practitioners should be negotiated.**
- **The ambulatory clinic should provide modern herd health teaching.**



## 4.5 FOOD HYGIENE & TECHNOLOGY AND VETERINARY PUBLIC HEALTH

### 4.5.1 Findings

The training activities in the Food Hygiene and Veterinary Public Health area are mainly performed within the “Veterinary Public Health and Food Safety” Division, that includes six Departments: Pharmacology and toxicology; Hygiene, technology and food safety; Microbiology and infectious diseases with clinic; Parasitology and parasitic diseases with clinic; Poultry diseases with clinic; Veterinary economics and epidemiology.

The course of “Food Hygiene and Technology” is a core course given in the 5<sup>th</sup> year, providing different kinds of theoretical and practical activities for a total of 165 hours, including the EU-listed core subject Inspection and control of animal foodstuffs or foodstuffs of animal origin, “Food science including legislation” and Practical work (including practical work in places where slaughtering and processing of foodstuffs takes place). Theoretical activities of “Food Hygiene and Technology” consist in lectures (60 hours); practical activities (59 hours of non-clinical animal work and 46 hours of extramural practical work) are performed both inside the Faculty and outside, at facilities and structures (slaughterhouses, meat processing plants, dairies, ice cream factory, Zagreb market, honey producers) and public Institutions that have official arrangements with the Faculty. Students carry out there their practical work tutored by teachers and under the guidance of external professionals. Besides Food Hygiene and Technology, the EU-listed core subject Practical work is given during the activities “Professional Clinical Work”, “Clinical Field Work” and “Poultry Diseases” (30, 84 and 6 hours of extramural practical work at the 6<sup>th</sup> year, respectively). Among the EU-listed core subjects in the Veterinary Public Health area, Preventive Medicine is given within “Heard health” (15 hours of extramural practical work during the 6<sup>th</sup> year), “Infectious diseases of domestic animals” (3 hours of lectures and 8 hours of practical clinical work at the 5<sup>th</sup> year) and “Veterinary epidemiology” (1 hour of lectures and 2 hours of laboratory and desk-based work at the 3<sup>rd</sup> year) courses, and Veterinary State Medicine and Public Health is given within “Veterinary epidemiology” (1 hour of lectures and 2 hours of laboratory and desk-based work at the 3<sup>rd</sup> year), “Infectious diseases of domestic animals” (1 hour of lectures at the 5<sup>th</sup> year) and “Veterinary Legislation and Regulatory Affairs” (13 hours of lectures and 28 hours of seminars at the 5<sup>th</sup> year) for a total amount of 359 hours and 7.28% of total curriculum hours (table of section 4.1.1 of the present report).

Within the study track in VPH, there are some obligatory subjects (type 1 electives) strictly related to this area that must be taken by all the students enrolled in such track: “Food Hygiene and Quality Control”, “Veterinary Legislation and Food Safety Control” and “Veterinary Public Health”, for a total amount of 171 hours (table 4.3c of the SER) of the total 290 hours given as type 1 electives in such a track (table of section 4.1.1 of the present report). Other electives included in EU-listed subjects within the FH/VPH area (table 4.4c of the SER) are offered as free choice (type 2 electives) for a total amount of 352 hours (table of section 4.1.1 of the present report). Not only the specific VPH track but also the common track and the other two specific tracks (SCA and FAH) include other topics considered within the area FH/VPH, according to the EU regulation 854/2004, such as animal health, animal welfare, pharmaceutical substances, pre-harvest quality management population dynamics of infection and intoxication, diagnostic epidemiology, animal welfare at the level of production, transport and slaughter, environmental issues related to food production including waste management, principles of the common agricultural policy, market measures. As already reported in section 4.1.1 the Team verified that students receive a more than sufficient common education in Veterinary Public Health (16.33% of the total curriculum hours).

Practical exercises carried out at the FVMZ (sensory test, chemical and microbiological analyses of milk, meat, eggs, fish and fishery products, fats and honey) are performed especially in the practical training room (which serves also as chemical and microbiological

laboratory - 125 m<sup>2</sup>) of the Department of Hygiene, Technology and Food Safety, where also preparatory exercises are performed before slaughterhouse practice. In the same room seminar activities are also performed. Some documentation of practical activities performed by students was available under the request of the Team, but standard or even settled document-keeping procedures need to be improved.

Students perform practical training in the slaughterhouses and prepare such practical activities performing also exercises in the practical training room of the Faculty to improve knowledge and skills in *antemortem* examination, facility's structure, construction requirements, procedures and duties of official veterinarians. Nevertheless, they seem not to prepare *postmortem* (organ) examination at the Faculty (although reported in the SER). The activities are carried out in 4 different kinds of slaughterhouses chosen on the basis of their proximity to Zagreb, of the helpfulness and availability of veterinarians, of the slaughtering capacity (both high and small capacity). Some of these facilities are of excellent level. Many activities in the field of VPH carried out outside the Faculty are performed also at the Croatian Veterinary Institute located in Zagreb that has an agreement with the Faculty and offers high level and updated practical work. Students travel to most places where practical activities are performed using Faculty's buses.

The amount of curriculum hours given in the area of FH/VPH is completely satisfactory. Ratio R9 and R10 should be corrected according the new data provided by the Faculty during the visitation. Actually, the total curriculum hours offered in FH/VPH area used in the calculation of denominators should be 359 (instead of 285 as the Faculty proposed during the visit). In any case, the denominators R9 (13.746, 13.738 and 13.738 for SCA, FAH and VPH tracks, respectively) and R10 (0.462) obtained in all three study tracks are both satisfactory.

According to the document provided by the Faculty, the number of teaching and support staff allocated to the FH/VPH area (Division of Veterinary Public Health and Food Safety) seems more than adequate and qualified.

#### 4.5.2 Comments

According to the opinion of the Team on the basis of the new data presented by the Faculty the total number of hours devoted to FH/VPH area seems to be adequate and well balanced, but the hours in Epidemiology are lumped together and could be differently arranged.

Very important procedures related to Health Herd Management such as biosecurity, epidemiology sampling, record keeping, reproduction data, etc., should be taught during practicals and not only in the lecture rooms.

Although the slaughterhouse facilities visited by the Team and the collaboration offered by the Company's staff to the Faculty seemed to be excellent, a more effective arrangement of practical activities on organs and carcasses also at slaughterhouse level would be beneficial. The same aspect should be considered at FMVZ level even more urgently: its facilities are adequate, but they should be improved for allowing students to perform the examination of organs from slaughterhouses

#### 4.5.3 Suggestions

- **The Team suggests splitting the total of 40 hours into “Basics of epidemiology” (e.g. 10 hours theoretical training) in the 3<sup>rd</sup> or 4<sup>th</sup> semester and “Applied Epidemiology” (e.g. 10 hours theoretical training, and 20 hours practical training) in the 9<sup>th</sup> or 10<sup>th</sup> semester.**
- **During extramural practical work at the visited slaughterhouse a slightly wider, safer and more quiet place than the slaughtering chain should be provided or identified (i.e. along the chain at the end of slaughtering process, if possible) to**

**allow students to perform post mortem examination especially on condemned organs and discuss their observations together with the teacher and/or the external professional.**

- **To complete intramural training of the students in meat inspection the use of condemned (but not necessarily) organs from the slaughterhouse, in case in coordination with pathology section, should be implemented.**

## **4.6 ELECTIVES, OPTIONAL DISCIPLINES & OTHER SUBJECTS**

### **4.6.1 Findings**

The new curriculum includes electives which students take as a free choice. This curriculum includes three tracks selected from the 5<sup>th</sup> year: Small companion animals, Farm animals and horses, and Veterinary Public Health. Study tracks include obligatory subjects related to individual tracks and electives related to individual tracks.

In the new curriculum implemented in the academic year 2005-06 a major change was the increase of elective subjects offered to the students (77 subjects) in comparison with the old curriculum (50 subjects). Curriculum hours to be taken as electives are listed in Table 4.3 of the SER (p 70).

Electives are divided into two categories;

- 1) Type 1 electives which students take as a free choice. They are common to all students, regardless of the selected study track; students may enrol in any of the electives from the list offered in a particular semester. Students obligation`s toward elective subjects are the same as towards obligatory subjects. Students begin to take these common (type 1) electives from the second semester onwards to complete, in the six years, a minimum of 27 ECTS. Students in the 12<sup>th</sup> semester may enrol only in clinical electives.
- 2) Type 2 electives relate to individual tracks. Elective subjects from the study tracks are enrolled by students of 10<sup>th</sup> and 11<sup>th</sup> semester after they have selected one of the tracks. Tables 4.4a,b,c provide information on the electives in the particular study track. Each student has to complete at least 7.5 ECTS in this type of track electives.

Table 4.4 (p73) lists other subjects that students have to take: Graduation thesis, Physical Education and Health, and Introduction to English Veterinary Medical Terminology I and II. The majority of graduation thesis is made on clinical research but students can choose topics amongst all those offered in all curriculum fields.

### **4.6.2 Comments**

The number of electives is really high and their organisation seems very complicated which is probably very confusing for students, hard to regulate and challenging to evaluate.

It is the opinion of the team, that the requirements regarding Electives, Optional Disciplines & Other Subjects as they are laid down in Annex I of the SOP are met.

### **4.6.3 Suggestions**

- **The FVMZ should reduce the number of electives offering subjects more applied to the students with a broader professional perspective based on the co-operation of different departments.**

## **5 TEACHING QUALITY & EVALUATION**

### **5.1 TEACHING METHODOLOGY**

#### **5.1.1 Findings**

Computer aided or e-learning courses (LMS system) were developed as of the academic year 2008-2009 by using the Intranet (Moodle platform) that serves also for feedback from students and teachers. Teachers regularly use IT equipment, smart boards, Internet, multimedia, simulations, animations, and telecommunication and computer tests. Computer aided learning is more developed in statistics, pharmacology, physiology and epidemiology. Telecommunication is mostly used as a communication network for the staff members between different organisations.

Student representatives participate in the development of competencies and in the definition of learning objectives/outcomes. Learning outcomes are listed in the curriculum for each subject; learning objectives for courses and specific subjects are published in the course syllabus. Students gain information on courses and examinations beforehand; however, the syllabus is not discussed in details.

The Faculty has an intranet (<http://www//vef.unizg.hr>) where teaching material is available to the students in relation to the course-year they are enrolled in. Students gain access to the intranet upon request to the Department of Informatics of the FVMZ. Students work on teaching materials in Croatian and English, mostly in the form of University textbooks that are written by the university professors (and for which authors gain a score which helps them in their promotion process). Also web manuals and manuals prepared by teachers are used, all available on the e-learning LMS system or in Departmental websites. 20 up to 59 obligatory subjects and 14 up to 72 electives are fully using e-learning; also 8 obligatory subjects are partially using e-learning. The entire first year of study is active in the use of e-learning LMS system. Internet access is provided in the library lobby, departmental library computers and in the form of Wi-Fi within the university area.

Students work mainly from mandatory textbooks and course materials which are published in the course syllabus. Teachers can upload notes and other resources on the Faculty Intranet but it is strongly recommended for the students not to study mainly from notes. Still, a certain percentage of students choose to use lecture notes and presentations as a main source for studying instead of textbooks. Combined, the university library, the faculty library and the departmental libraries hold enough textbook copies for the students to borrow and read within the library. Additionally, university textbooks can be bought from the faculty library with a marked discount.

Teaching in clinical sciences is mostly problem-oriented on real clinical cases. Teaching in most subjects is problem-oriented, especially in seminars with a smaller group (30 students) than in lectures but the Faculty itself recognizes that problem-based learning is used less than what would be expected.

Student representatives are members of all committees and boards in charge of teaching quality and control. Evaluation of teaching and teachers is based on surveys that students anonymously fill out for the Faculty and the University, plus special surveys for specific subjects. The Faculty will also conduct surveys and evaluations when electing teachers. Student surveys are considered a valuable asset in enhancing teaching quality and improving teaching atmosphere. Students feel that their opinion is respected but changes are not always visible. The Office for Quality Management organizes the student survey for the evaluation of teachers, conducted on-line from the academic year 2007-8, each semester prior to the end of the teaching period. Data are processed statistically and psychometrically. Teachers are evaluated for their attitude towards students, performance in general, work motivation and expertise. Results are analyzed by the University and are reported to the

Faculty. Teacher's individual results are confidential, only available for the teacher, the Dean and the University. The Quality Management Committee is in charge of the development, assurance and control of quality; this committee is chaired by the Vice-Dean for quality control. The teaching program is revised by the Committee for Integrated Undergraduate and Graduate Study (CIUG) to ensure coordination. The Head of Department controls teaching and reports to the head of division, the dean and the Faculty council.

The curriculum covers all major areas of Veterinary Medicine and, in general, offers a good balance between theoretical and practical work. The first two years of studies are mostly theoretical training while during preclinical and clinical disciplines the relative amount of practical teaching increases gradually. Practical teaching and clinical training constitute the majority of teaching during fifth and sixth year. The amount of clinical and practical training has been increased within the Faculty. Division between theoretical and practical training can be seen in Table 4.1 (a, b, c) on pages 62-63.

From 2009 the Faculty adopted a catalogue of "Day-One skills with specific learning outcomes for each core subject". Pages 118-119 of the SER offer a list of general skills listed in the Diploma Supplement of the degree title. Minimum practical competencies are listed in the Practical Work Log. University teachers and professors keep track of the tasks and are responsible for double checking and crediting that students have gained each and every practical skill during a course / rotation. During some practicals students are obliged to maintain a practical work log describing cases, treatment options, differential diagnosis, etc. Practical work diaries are red by the professors or the assisting professors.

Assessment of D-1 Skills is based on passing mandatory studies, courses, exams, attendance to lectures, seminars and exercises, active participation and continuous assessment. The SER itself states that the assessment of day-one skills is perceived to be hard within the faculty. Throughout their studies students are taught omnipotent skills and have the possibility to gain knowledge on a large variety of veterinary subjects.

Attendance of students has to be at least 50% for lectures, 70% for practicals and 100% for night duties in clinical rotations and extramural clinical work. Students can individually decide when they wish to have their night shifts. Within each discipline a record of students' attendance and activeness is maintained which is accounted for in the student's final grade.

Several log-books are mentioned: students are obliged to provide a generally filled out report/log-book of their obligatory extramural training in the general form of a learning diary and also to keep a practical work log. Practical work log consists of a case overview, differential diagnosis, discussion on treatment options, causes etc., and is reviewed by the teachers. If necessary, students are asked to do corrections or additions to their practical work log. Students have usually designated cases which they try and follow from admission to discharge.

Students are encouraged to be motivated and active participants instead of being passive listeners. The learning methodology is concentrating on providing education with scientific basis with imbedded theoretical practical training. Special attention is paid to students' self-directed learning hours.

The Faculty also assesses the output by continuous monitoring of the graduates' employers through the Croatian Veterinary Chamber.

### **5.1.2 Comments**

The Faculty is highly involved in improving the process of evaluation and control of teaching quality following the suggestions of the former EAEVE final report but having in place 3 different surveys to fill out by the students (for the University, the Faculty and "specific" subjects) for the same purpose seems a heavy burden.

E-learning is an expanding tool for teaching, especially when teaching is problem-oriented, nevertheless from 2009 to date, e-learning is regularly used only by 47% of obligatory subjects and 19% of elective subjects in the FVMZ.

It appears that there are too many heads and managers to control the curriculum (Head of Department, Head of Division, Dean, and Faculty Council).

The search process for textbooks is only available using Croatian keywords at the faculty library. This could be relatively difficult for foreign students since also English books must be searched with Croatian key words.

It is the opinion of the team, that the requirements regarding Teaching Methodology as they are laid down in Annex I of the SOP are met.

### 5.1.3 Suggestions

- **With regard to teaching quality and evaluation, efforts should be made to merge the 3 different surveys on teaching quality. The team strongly suggests developing only one questionnaire looking for a more efficient analysis of the results and a less bothersome process for the students.**
- **The Faculty, through a committee or working group, should analyse the low rate of usage of e-learning and problem-based learning by the teachers and propose measures to promote its use (by recognition of extra workload for the teacher, establishment of awards for teaching excellence, etc.).**
- **The Faculty should guarantee free access to the intranet for all students without request; enrolment in the subjects should be considered as a sufficient requisite.**
- **The Faculty should simplify the process of responsibility on the implementation of the teaching programme and its coordination.**

## 5.2 EXAMINATIONS

### 5.2.1 Findings

The areas covering examinations are described in the SER. There are sufficient tables considering grading systems beginning from page 123 presenting tabulated information on different grading criteria. The grading criteria and credits given vary depending on the given subject and the teaching methods that are used. An exam calendar is published on the Faculty website at least three months prior to the start of academic year and exams are held during exam periods. The information is easily accessible.

Exam periods are held as regular and special. Exams can also be performed during the special examination periods which are determined at the beginning of the academic year. The Faculty of Zagreb follows Article 61 of the Regulations on the Integrated Undergraduate and Graduate Study of Veterinary Medicine: Two examination dates have to be allowed with a minimum of 14 days interval and there has to be a special examination period with a minimum of 30 days interval. Regular exam period months are February, June/July and September and for each course there are at least two examination dates during every examination period. Students can sign up for examinations and courses by using the Studomat-posts which are located on the university campus as well as from their personal laptops after identifying themselves with individual usernames and passwords. Students are happy with the examination protocol.

Grading of subjects and courses is based on student activity, attendance and final examination. Student attendance and activities are recorded and assessed throughout teaching. Up to 60% of the grade can be formed by being active (attendance and activities in

lectures, exercises, seminars, interim exams, colloquiums, preliminary exams, knowledge checks) and 40% is formed on the basis of the final exam. The maximum amount of credits is 100, minimum 60. On page 123 the division of credits is listed. Student has to complete all forms of teaching and gain the minimum of 36 credits on activeness and attendance to be able to sit the final exam. Grades are given from 1 to 5; 2-5 are passing grades. The final grading is done based on the student's achievement with predetermined criteria.

Exams can be individual or group examinations and are performed as oral, written (fill-in-questionnaires, essays, right-or-wrong answers, multiple choice questions) or a combination of the two. External examiners are used. Students have the possibility to see their written tests and grading process after the exam. The student has the right to appeal and be re-examined if they are unhappy with a grade. The maximum amount of retakes for each exam is four (4); the 4<sup>th</sup> time is conducted by an exam committee, and those students who fail to pass an exam at their 4<sup>th</sup> attempt they lose their right to study veterinary medicine. Apparently this happens very rarely. Courses have to be passed in the order set by the Faculty and to some extent a student cannot take on courses from higher subjects before passing the previous examinations.

### **5.2.2 Comments**

External examiners are used even though the SER does not mention them clearly.

It is the opinion of the team, that the requirements regarding Examinations as they are laid down in Annex I of the SOP are met.

### **5.2.3 Suggestions**

- **None**

## **6 PHYSICAL FACILITIES & EQUIPMENT**

### **6.1 GENERAL ASPECTS**

#### **6.1.1 Findings**

The FVMZ is located in Zagreb, Heinzlova Street, 55. The Faculty has 26,915 m<sup>2</sup> of buildings in a total area of 58,783 m<sup>2</sup>. There are 12 buildings:

- 1 building which host the Dean's office, preclinical Departments and student premises.
- 4 buildings for basic and preclinical Departments, Department of Public Health and Food Safety, student canteen.
- 7 buildings for the Clinics.

In 2007, the FVMZ received a donation from the Croatian government of 100 hectares of land in Rugvica (Dugo Selo), some 15 Km east of Zagreb which will be dedicated to build up a Faculty farm to improve clinical teaching in graduate and postgraduate studies and to organize Continuous Professional Development courses for veterinarians.

In the past decade the FVMZ has invested close to 6.5 million € in renovation and/or rebuilding of facilities such as the main lecture hall, multifunctional classroom for practicals in Physics, the clinics (surgery, orthopaedics and ophthalmology + reproduction and obstetrics), and the necropsy room. A new building for Infectious Diseases with Isolation Unit (1 million

€) has been under construction since 2012. Slightly more than half of the above sum of 6.5 million € (approximately 3.6 million €) has been invested in new equipment (see page 13 of the SER) in the last ten years.

For practical training, all clinical laboratories are equipped for different testing: pathological, histological, haematological, biochemical, mycological, parasitological and toxicological tests can be performed.

At the Faculty there is a restaurant for students (Student Centre) with subsidized prices that do not apply to foreign and Erasmus students who have to pay the full price of meals (however, such prices are really cheap). Some buildings of the FVMZ have coffee, beverage and snack vending machines. Students on night duties use lounges at the clinics. There are no residencies or sports facilities on campus.

The FVMZ has of 8 lecture halls: 1 large room for 209 students, 7 medium size for 80-100 students for a total of 785 places (table 6.3 page 141). Number and size of lecture halls are sufficient for the theoretical training of all students and programmes offered in the Faculty. There are 26 rooms for group work for a total of 732 places (table 6.4): 1 too large for the purpose (114 students), 11 large ones (25-63 places), 12 medium size (8-20 places) and 2 too small (2 students). For practicals, there are 14 small laboratories (5-15 students).

There is a necropsy room in Pathology with capacity for 30 students, 2 dissection rooms in Anatomy for 20 and 114 students and 1 dissection room for fish and bees (30 students). Equipment in Anatomy and Pathology is adequate but Anatomy needs a cold-storage room (4°C) to allow for the use of fresh materials (see point 4.2). Pathology has a suitable set of dissection tables, materials, scales, freezers, fume hoods and refrigerators but there is no hoister to perform vertical dissection or move cadavers of large animals so these animals are disposed of and opened up on the floor of the necropsy room.

The Faculty disposes of sufficient number of vehicles for student's transportation: for the outpatient Mobile Clinic the FVMZ has two buses purchased in 2003 with 18 and 28 seats, and 1 van (8 seats). For farm animals transportation the Faculty uses a truck and for pets the Faculty has a contract with a private company (ZOO-TAXI).

The Faculty has a Department of Health and Safety at work. Prior to starting practical work students are introduced to rules and safety measures in veterinary organizations for extramural training. Contracted institutions outside the Faculty are obliged to implement and ensure safety measures during practicals with the students. Students receive all information about future risks and chemical or biological risks associated with laboratory activities during the introductory class at the start of practicals. The Ministry of Health and Welfare approved vaccination against rabies of students from 3<sup>rd</sup> year of study and for the staff of the clinics.

During practicals students wear lab coats, gloves and goggles. Not all laboratories working with potentially hazardous materials have equipment and instructions for first aid in case of an accident. All lectures halls, laboratories for practicals, etc., are equipped with fire protection and fire extinguisher but some safety devices (eye-washers, showers) are missed in relevant places. First aid recommendations are not clearly visible in all working rooms. Although buildings of the Faculty are spacious and well maintained, accessibility for disabled people has not been provided for in most cases.

In the clinics students can wear snickers or non-protective boots thereby being potentially exposed to physical damage from large animals. Also out-dated medicines were present in some clinics.

Facilities and equipment available for theoretical and practical training in FH are satisfactory both at Faculty and external structure level.



### 6.1.2 Comments

The concentration of facilities and equipment within the FVMZ provides good possibilities for the Faculty to cooperate with the Faculty of Medicine and other research institutes. Multiple local and government funding resources are successfully combined to improve the quality of premises and to update research and teaching equipment. Repetition of equipment for clinical diagnose in all laboratories for practicals seems truly inefficient and expensive to maintain.

The FVMZ itself recognises as weaknesses (page 31):

- Inappropriate facilities for isolation of infected animals.
- Partially out dated IT structure.
- Non rational use of existing scientific equipment.

Research laboratories are equipped mainly with Faculty budget.

There is no apparent support of outside bodies for the building up of the Faculty farm in DugoSelo.

Suggestions for future changes in the SER are almost referred to the lack of funding and the possibility of turning to European financial resources.

It is the opinion of the team, that the requirements regarding Physical Facilities & Equipment as they are laid down in Annex I of the SOP are met.

### 6.1.3 Suggestions

- **Buildings are spacious and well maintained but accessibility for handicapped should be facilitated.**
- **There is some variation in the overall level of safety within the University. The team especially noted that storage and handling of hazardous chemical products in some laboratories is far from being considered adequate. This situation should be solved. Also, eye washers and first-aid boxes should be present in all laboratories where hazardous material is being handled.**
- **The team noted expired medicinal products and sutures in some places. A more rigorous control procedure should be established.**

## 6.2 CLINICAL FACILITIES & ORGANISATION

### 6.2.1 Findings

The internal diseases' premises for small animal shall be extended and refurbished in order 1) to permit the daily work to be achieved in normal conditions, 2) to respect patient flows and hygiene.

Physiotherapy's facility is not only well-equipped but kept clean and client-friendly. On the opposite, the radiology facility has not been renovated for years and hygienic minima cannot be achieved. Lack of computer-tomography is a major draw-back for diagnostic efficacy, service to the community and recognition of the diagnostic imaging unit.

The Clinic for surgery's premises and premises' organisation are very satisfactory.

The Clinic for gynaecology's premises and premises' organisation are very satisfactory.

The new isolation unit and infectious disease clinic under construction will more than satisfy the expectations and also highlights to the whole faculty the importance of infectious diseases and biosecurity.

Emergency and ICU's premises for a centralized emergency clinic and ICU do not exist.

Avian and reptiles department premises fulfil requested standards.

Considerable investment has gone into the surgical and diagnostic equine unit to produce first-rate facilities. The department has direct access to diagnostic imaging. Radiographic diagnostics must be available for the equine staff. It is unwise to walk horses to the radiography section to have radiographs taken in the open air. This is both a hazard and also fails to provide timely radiographs for the clinicians.

### **6.2.2 Comments**

Some clinical facilities are very well-equipped and organized. Some others have not been renovated for many years. Altogether it seems that the faculty is facing problems in order to 1) renovate, 2) maintain some of the existing premises (for instance Radiology, Internal diseases, etc. Urgent measures should be undertaken in this matter. The new equine facility has the potential to be a first-rate teaching unit. Radiographic diagnostics must be available for the equine staff in order to demonstrate the student's clinical diagnostic abilities.

Cooperation between the clinical divisions and departments should be physically reinforced (both from a practical, administrative as well as scientific point of view). A central emergency and Intensive Care Unit should be implemented in order to save material and human resources. It might be suggested to appoint a hospital-advisory board (with one representative of each clinical department) helping building up a common vision for the veterinary hospital. With this being achieved, a homogenous set of standard operating procedures could be implemented to all clinical services at the hospital level.

It is the opinion of the team, that the requirements regarding Clinical Facilities & Organisation as they are laid down in Annex I of the SOP are met.

### **6.2.3 Suggestions**

- **Some clinical facilities are client-friendly and well equipped but Diagnostic Imaging should be urgently renovated and provided with modern equipment.**
- **Small animal clinic for internal diseases should be refurbished and extended. A centralized emergency clinic and Intensive Care Unit should be implemented in order to save material and human resources.**

## **7 ANIMALS & TEACHING MATERIALS OF ANIMAL ORIGIN**

### **7.1 Findings**

The Faculty does not have its own farm. On field activities are carried out at farms and other structures and institutions the Faculty has agreements with, some of them listed in table 7.2.2. All usual (as well as unconventional) animal species seem to be covered (tables 7.2 and 7.4b).

Animals and teaching materials of animal origin come from different sources. Bones of domestic and wild animals are used for dry anatomy and come mostly from the bone collection of the Department of Anatomy, Histology and Embryology. Mainly dogs, sheep, horses, hens, occasionally pigs, but also laboratory rats, reptiles and dolphins are used. Other sources of bones, organs and other (i.e. limbs) are dead animals or animals undergone euthanasia (dogs and horses) especially from the clinics, or purchased from the market (sheep, pigs, hens). Other animals or organs or body parts come from other institutions and slaughterhouses (mainly horses, cattle, pigs). Dead animals are dissected and internal organs or other body parts are stored in the wet anatomic collection or simply for practical activities after formaldehyde fixation using appropriate basins. Live animals come from different sources (some of which have been already mentioned) such as charitable organisations (especially dogs) and farms, and are mostly used for clinical anatomy, which is anyway carried out also on preparations. All animal materials come from structures and institutions the Faculty has agreements with. Some models of ruminants and equines and their body parts are also used.

The Faculty has its own transportation vehicles authorised for the purpose, a transport truck for farm animals with three licensed drivers with which it is possible to transport animals 365 days a year. For transportation of small animals the Faculty signed a contract with a private transportation company within the city of Zagreb.

In Anatomy students are exposed to an adequate number of cadavers, organs and skeletons from different domestic animals; students also practice Clinical Anatomy with live animals in the clinics (Table 7.1, Page 151) Some anatomic models are also used. No fresh materials are commonly used because of the lack of a cold room.

The caseload of necropsies in Pathology is good and covers most of domestic animals and some wild and zoo animals. At the Faculty no organs condemned from slaughterhouses are used in Pathology and/or in subjects related to FH/VPH area. This activity is performed exclusively during supervised extramural practical work. Anyway, several practical activities are carried out by students in the practical training room and/or other laboratories of the Department of Hygiene, Technology and Food Safety on materials purchased at retail level or made available by factories, even though no mention is made in the SER about the amount of such materials.

Rabies is a big issue in Croatia. About 750 dogs are being vaccinated yearly at the Clinic of Infectious Diseases of the Faculty against rabies.

Pet owners that do not use the clinic as first choice come mainly due to dissatisfaction with other veterinarians or referred by other colleagues. Almost all large animals are brought to the Clinics of the Faculty directly without prior referral from other veterinarians.

Practitioners can stay at the Clinics to attend and/or participate in the activities but only under previous notification to the responsible person(s).

In Croatia the practice in production animals (bovine, small ruminants, pigs) is mostly carried out by veterinarians coming from former state veterinary institutions that have been privatised after the democratic transition. The Faculty has a good cooperation with them. Cooperation with practitioners consists in provision by the Faculty of services in animal

diagnosis and treatments and consultation services, but these collaborations are not always official and mostly collegial and personal.

## 7.2 Comments

Students and staff in Anatomy handle formalin fixed material for practical activity which is absolutely not safe. When performing animal dissection students have to be trained on the safe handling of chemicals, have adequate safety devices and use many necessary precautions. Also fixing material as formaldehyde must be kept and handled by staff according to strict safety measures, which sometimes are not completely respected.

In FH/VPH area students are exposed to adequate material for supporting the relevant training both at the Faculty and during extramural work, with the exception of condemned organs from slaughterhouses that are not seen in the Faculty.

The FVMZ Clinics are open 24 hours a day 365 days a year and offers all services needed by patients and owners.

Table 7.3 (page 156) shows very large numbers for caseload, especially for dogs and cats, but there are important differences between animals received for consultation (a) and animals hospitalised (b). The caseload in small animals does appear to be very high, although probably not to the degree listed on the SER: the day the Team visited the clinical premises, a total of approx.50 cases (including old and new cases) were being seen, which would give a total number of cases of 18250/year. This is absolutely above any EAEVE threshold considering the number of students, and the FMVZ must be commended for providing a good service to its clientele as well as providing an excellent number of cases for its students.

The Mobile Clinic takes 60 hours per student in the 10<sup>th</sup> semester and 60 hours per student in the 11<sup>th</sup> semester. In each semester about 36 field trips using Faculty buses are organised. It begins every week from Monday to Thursday at 8 a.m. and is conducted by teachers of 4 clinics: Surgery, Orthopaedics and Ophthalmology, Reproduction and Obstetrics, Internal Diseases, Department of Microbiology and Infectious Diseases. It is described in detail also in paragraph 4.1.3 (page 80-81). These activities are carried out by means of contracts on cooperation signed every year between the Faculty and veterinary organisations and negotiated on a daily basis and classes organised to ensure a wide variety of cases and a greater number of treated animals.

It is the opinion of the team, that the requirements regarding Animals & Teaching Materials of Animal Origin as they are laid down in Annex I of the SOP are met.

## 7.3 Suggestions

- **Anatomy should switch from formalin fixed to fresh materials for its practicals.**
- **The establishment of a Faculty farm should be seriously taken into consideration as this would drastically improve pre-clinical exposure of students to farm animals.**
- **The amount of fresh materials (animal organs and parts) from slaughterhouses seen in the Faculty should be improved.**
- **Altogether the allocated hours for clinical training are adequate for the number of students and hands-on training is prioritized but the case-load in some clinical services such as Gynaecology and Horse Clinic should be improved.**

## **8 LIBRARY & EDUCATIONAL RESOURCES**

### **8.1 Findings**

The faculty library of the FVMZ is open from 8 AM to 4 PM based on the working hours of the University personnel throughout the study year. The library is located on the faculty premises and employs three (3) librarians. No group teaching on faculty library resources / databases / search engines are provided. Library website provides information and help, including online catalogue of the book stock. The library covers 284 m<sup>2</sup> and consists of a group work and reading room (25 seats) for students and teachers, working area for librarians and storage room for books and journals. No individual working area is provided and the students tend to use the faculty library for group and seminar work. Additional 10 reading seats can be found elsewhere on the premises. Rare and valuable materials are stored in protected collections (Faculty Museum) and are available for reading under the supervision of a librarian. Domestic journals are available on various areas of veterinary medicine but full-access foreign journals are scarce. The library book stock consists mostly of Croatian literature, official University textbooks written by the University professors and approved by the faculty and university personnel and the Senate. Students are able and encouraged to purchase mandatory University textbooks from the faculty library with a discount.

The database of the faculty library can be found and accessed in electronically and manual form. At the end of 2011 the inventory book held 36 430 entries while the database held 34 274 entries. Materials are governed with a digital data base Medved. The search of both Croatian and foreign books can only be conducted in Croatian key words. Various modules (Cibiga, Barkod, Casopis, Blagajna) are used under Medved to track users, issuing and to adjust the deadlines, to enhance library functions and to work with periodicals.

During and outside the working hours the students have the possibility to use the large University library which is located outside the campus area. The University library is open 24h and holds a variety of mandatory textbooks and material on all the different faculty subjects, including the veterinary profession. Students prefer the University library for individual studying. The university library consists of five floors and has separate group / seminar and group work areas, areas for silent and individual learning, access to computer and internet and a cafeteria with affordable prices. University library offers help and guided tours for new users. To gain access to university library, students have to identify themselves and pay an annual fee. Also non-students can gain access by paying a fee.

Additionally 23 departmental libraries have been founded on the university premises. No professional librarian is employed. Departmental libraries concentrate on certain departmental or clinical subjects and are open and accessible for students and staff during university working hours. These subsidiary libraries are not connected by a network, information on the book stock and a catalogue is not available.

The faculty, departmental and university libraries together hold reading copies and copies for loaning of all the mandatory textbooks determined in the course syllabi. Interlibrary loans and transfers are possible but relatively laborious and are not used by the students.

The FVMZ has Information and Communication Technology classrooms (ICT) which are held in four rooms with 72 computers. E-learning possibilities and internet access are provided via the computers in the libraries and with Wi-Fi access within the University premises. Photocopying and printing options are available for students and teachers.

## 8.2 Comments

The Faculty Library and the reading rooms do not support possibilities for both individual and group work. The FMVZ Libraries are mostly used for group and seminar work. Students prefer the university library for individual studying.

It is the opinion of the team, that the requirements regarding Library & Educational Resources as they are laid down in Annex I of the SOP are met.

## 8.3 Suggestions

- **Introductory group teaching / touring /information on the faculty library should be considered for example for the first year students as they enrol in the University for their first year.**
- **The possibility to use search engines with English keywords should be looked at when considering exchange students looking for foreign material.**

# 9 ADMISSION & ENROLMENT

## 9.1 Findings

A selection procedure for admission is in operation. Students are chosen on the basis of the score of their final high school exam conducted before graduation from secondary school, the Final Stage High School Exam (FSHS-EX). Students are ranked according to secondary school success, results on FSHS-EX, success in different competitions in knowledge and skills and other competencies and achievements. Faculties decide on the distribution of the points autonomously. A student may apply to 10 faculties in prioritised order with NISpVU which is a central informational-administrative office. The FVMZ had a specific entrance examination program in operation two years previously, but at the moment here is no admission test for students to enrol in the FMVZ.

A medical certificate is required from candidates applying to the FVMZ to screen out students with mental illnesses. For the 2011/2012 study year 130 students enrolled (125 Croatian citizens and 5 foreign citizens), while this number has gone up to 150 in the current (2012-13) academic year.

Since 2007/2008 according to their ranking the first 45 candidates study at the expense of the Ministry. Places from 46<sup>th</sup> to 105<sup>th</sup> pay a fee of 154 kuna (20€) while the fee increases by 145 kuna for each student ranking next in line beginning from the 46<sup>th</sup>. From ranking places 106 to 125 each candidate pays the full amount of 9240 kuna (1250 €) per study year.

There is no system for deciding quota on student admittance, social needs or the needs of the labour market within the FVMZ. This is not found to be problematic since the University feels that regardless of the economic crisis, the need for qualified veterinary personnel is high. According to the students unemployment among veterinarians has grown and the current economic situation is not very profitable for graduating veterinarians. The FVMZ considers the capacity of the faculty to cater for students when deciding on the quota; 130-150 students/year is the maximum amount that can be admitted so that teaching quality and sufficient premise resources can still be maintained.

Due to the lack of entrance exam the student material is highly heterogeneous, which makes teaching very demanding and causes partially the high drop-out numbers and low flow of students moving from 1<sup>st</sup> year to the 2<sup>nd</sup>. Another possible reason could be that students do

not have equal skills in basic subjects. Students also use veterinary medicine as a platform to gain access to dental medicine as changing over after the first year of studies to a different degree course can be done within the current admission system. Some students also drop out because of general social reasons. After finishing first year 24.8% of the students do not continue on to the second year. Student and graduation numbers have been decreasing annually (page 187 table 9.3 and page 188 table 9.4a) Average duration of studies is 6,038 years with the new curriculum. Maximum duration of study years is 12; student status is maintained 8 years after enrolment. Students have to fulfil a certain list of requirements and pass certain courses as a prerequisite to enrol in the following year (page189)

ERASMUS and CEEPUS programs are functioning within the university and no additional tuition fee is required. The university has approximately 20-40 annual exchange students when considering also the students participating in summer school activities. Even though university textbooks are in Croatian, the libraries hold books in foreign languages. A language barrier is in place and the amount of sufficient English teaching and material for exchange students is questionable.

## 9.2 Comments

Clearly there is/has been a problem with the intake procedures / curricular formation since so many students drop-out, graduating rates have decreased annually and there is a multitude of students studying for extended periods of time. The SER states that since implementing the new curricula, the problem has taken a turn for the better although this is not yet clear according to the data provided to the Team.

Only 51.62% of students graduate which can be considered a low rate. Even though the problem might not be in the curriculum structure, having an entrance selection that picks up the motivated students would certainly give room for more motivated students / ensure better teaching quality for those who are motivated. The SER also states that having a heterogeneous student pool when it comes to the basic knowledge on chemistry and physics demands a lot of resources from the teachers. Applying an entrance exam could also decrease teacher's workload and give more time to concentrate on the "outstanding students".

It is the opinion of the team, that the requirements regarding Admission & Enrolment as they are laid down in Annex I of the SOP are met.

## 9.3 Suggestions

- **The high drop-out rate and low flow of students from first to second year is problematic. The university should look into a baseline test / examinations in basic sciences or the implementation of selective test before enrolment.**

# 10 ACADEMIC & SUPPORT STAFF

## 10.1 Findings

The ratio of teaching staff versus students is 3.69 which is above the current EAEVE recommendations. The ratio of veterinarians *versus* non-veterinarians (more than 70%) is satisfactory. The university is divided in divisions that correspond to the usual departments.

The divisions are further divided in departments that more or less correspond to services, units or laboratories.

The Basic and Pre-Clinical Sciences Division consists of seven departments. Within the Division, there are 26 assistant professors or full professors, 6 assistants and senior assistants, 9 junior researchers, 2 employees holding scientific titles and 28 support staff employees.

The Clinics Division consists of seven departments/ clinics: 41 assistant professors to full professors, 8 assistants and senior assistants, 9 junior researchers, and 54 support staff employees.

The Veterinary Public Health and Food Safety Division consists of six departments : 26 assistant professors to full professors, 5 assistants and senior assistants, 10 junior researchers, one employee holding a scientific title, and 32 support staff employees.

The Animal Production and Biotechnology Division consists of five departments : 16 assistant professors to full professors, 2 employees holding associate titles of assistants and senior assistants, 6 junior researchers, one employee holding a scientific title, and 11 support staff employees.

The total number of full professors is pretty high and not comparable to most veterinary establishments where departments or units are led by a single full professor.

Altogether the Ratio of teaching staff *versus* support staff is 0.75. This is in the range of what EAEVE recommends. The ratio of teaching and clinical *versus* support staff is very high.

As rules for new employments are very strict, personnel cannot be flexibly developed. In particular for non-scientific staff members, there is some discrepancy between the job's description and the actual work being performed.

In many divisions, clinics or departments, safety and biosecurity measures at work are not implemented in the daily life.

Evaluation of personnel is lacking at every level: Senior, junior and non-scientific staff.

Non-teaching staff, even if they are PhDs in laboratories, are not represented in committees and decisional organs of the faculty.

## 10.2 Comments

Altogether the technical staff should be increased as it allows teaching staff to concentrate on teaching and scientific issues.

Training programs for Junior, associate and assistant professors need to be implemented both nationally and internationally. Residency programs outside of the faculty should be encouraged and implemented in as many domains as possible as long as Diplomates are not present in all divisions. Existing Diplomates should be strongly encouraged to start residency programs. For these purposes, funding should be organized at the department, division, faculty and university levels.

Yearly formal evaluation of employees should be implemented at every level (Professor, Senior, junior and non-scientific staff).

Non-teaching staff should be represented in various committees and decisional organs of the faculty.

It is the opinion of the team, that the requirements regarding Academic & Support Staff as they are laid down in Annex I of the SOP are met.



### 10.3 Suggestions

- **The team advises to hold yearly employee appraisals.**
- **The FVMZ should guarantee that all groups of personnel are being represented in the decision bodies of the Faculty.**
- **Safety and biosecurity measures at work should be implemented by the staff at all levels and in all divisions.**

## 11 CONTINUING EDUCATION

### 11.1 Findings

Continuing professional education (CPE) is stated in the Faculty objectives. CPE of the Faculty staff is a fundamental step taken to ensure quality of teaching and lifelong learning.

A committee for CPE is functioning at the Faculty. It is recognised that there is a constant demand for CPE amongst veterinary practitioners. In combination with the Croatian Veterinary Chamber, Croatian Veterinary Institute and Directorate for Veterinary Medicine of Ministry of Agriculture, the FVMZ organises courses on Basic, Natural and Preclinical sciences, Animal production and biotechnology, Veterinary public health and food safety, Clinical courses and Miscellaneous courses (page 201-204 tables 11.1-11.4). The list of CPE courses is published online in Croatian. During the last four years 1198 veterinarians have participated in CPE programs and the courses seem to establish a relatively good base for the concept of continuing education. Additionally a series of courses have been proposed and are in place at the moment (small animal practices, large animal practice and veterinary public health). A series of courses lasts two years with individual courses held every three to four months. Anonymous surveys are being held to assess the quality and staff / participant satisfaction with Continuing Professional Education. Additionally, annual congress for veterinary practitioners, international Veterinary Science and Profession and workshops contribute to the concept of life-long learning.

CPE of staff is clearly stated as one of the missions of the FVMZ. Staff members have been provided with teaching on pedagogy, interactive learning and English language skills in the form of seminars and interactive lectures for the past three (3) years. The staff has also been instructed on the use of the VEF-LMS (patient data system), CARNet. Clinical staff members are encouraged to enrol into residential programs, rotations, specialisation visits abroad and are mostly financed by the FVMZ.

CPE is mandatory for Croatian veterinarians. In order to renew their licences issued by the Croatian Veterinary Chamber, veterinarians have to undergo a certain amount of CPE courses to gain credits. The licence has to be renewed once in five years and 20 points are necessary for licence renewal. Annually 600-700 (approx. half of the active veterinarians in Croatia) participate in the CPE events organized by the FVMZ.

Monitoring of the CPE credits does not follow a certain list of criteria. Credits can also apparently be gained from conferences, research activities etc., and the amount of credits given depend on the person reviewing the list of activities. A non-renewed licence due to failure to gain enough CPE credits can be regained easily by re-acquiring the needed amount of credits within a short time period. Veterinarians not practicing for a longer amount of time have to take a test to regain their licence. A veterinarian that is not licenced is not allowed to practice the veterinary profession with patients but is still for example allowed to buy and sell drugs. Apparently it is relatively easy to gain the needed credits so it seems not

to be an issue for many veterinarians to renew their licence. The gain of professional knowledge behind these credits can, because of the varying criteria, be questioned.

## 11.2 Comments

Due to the economic crisis attendance to the CPE events has been on a slightly decreasing trend. The issue of course fees is not discussed in the SER.

It is the opinion of the team, that the requirements regarding Continuing Professional Education as they are laid down in Annex I of the SOP are met.

## 11.3 Suggestions

- **The licence renewal system should be looked into. Apparently it is not controlled or monitored very efficiently and it is questionable whether the 20 credits gained can ensure proficient professional knowledge and continuing education.**

# 12 POSTGRADUATE EDUCATION

## 12.1 Findings

The Croatian Ministry of Science, Education and Sports accredited the two types of Postgraduate Training courses offered in the FVMZ:

- *Specialization studies* (equivalent to Master course). The Council for Specialist Studies is in charge of the 13 specialization courses offered by the FVMZ. Each course has duration of 2 years (4 semesters) with equivalence to 120 ECTS. Table 12.1 (page 207) of the SER lists available courses. These courses include obligatory and elective subjects. The training period ends with the preparation and defense of a specialist thesis/study by the postgraduate student under the guide of a mentor. Upon passing all the exams and successfully defending the specialist thesis, the postgraduate obtains a title of specialist in the field. Currently, 171 students (1 full-time, 170 part-time) are enrolled in this type of courses.
- *Doctoral studies in Veterinary Science*. The Faculty offers a unique course which extends for a minimum of 3 (full-time students) to a maximum of 7 (part time students) years, with equivalence to 180 ECTS. Currently, 128 (43 full-time, 85 part-time) students are enrolled in this programme. Some full-time students are employed as young researchers paid by the Ministry of Science, Education and Sports. Postgraduates have to pass obligatory and elective subjects and to prepare and defend a Doctoral thesis to obtain a PhD title; training is organized as follows:
  - 35 ECTS in obligatory research general subjects (25 ECTS) and elective subjects (5 ECTS).
  - 30 ECTS in branch oriented elective subjects. Students follow mentor recommendations to choose these subjects.
  - 120 ECTS on scientific activity (dissertation, attendance to research conferences, writing papers, etc.). Students gain credits with any given scientific activity done during the 4<sup>th</sup> to the 6<sup>th</sup> semester.

Annually, mentors prepare a report on progress of their PhD students and students prepare also a report on progress and on the quality of their mentors.

Most of the specialization courses offered by the FVMZ (Table 12.1) could be considered as clinical, but the organization and title is only recognized at a National level. The FVMZ has not in place any clinical rotating internship and/or residency programme with European recognition because there are only 5 EBVS Diplomates and the National legislation apparently doesn't allow hiring of Interns. Graduates do not have either the opportunity for scholarships for this kind of training.

The way to get the PhD. at the FVMZ is more or less according to the international rules.

## 12.2 Comments

The number of postgraduate students is sound taking into consideration the size of the Faculty.

In the opinion of the team, the number of postdoctoral contracts available and grants for PhD graduates is very limited.

Graduates working in the clinics have opportunities to follow Postgraduate specialization studies to become European Diplomates outside the Faculty.

It is the opinion of the team, that the requirements regarding Postgraduate Education as they are laid down in Annex I of the SOP are met.

## 12.3 Suggestions

- **The team acknowledges the efforts made by the Faculty to offer postgraduate specialist studies to practitioners. However, such specialist studies should not be made compulsory as every graduate in Veterinary Medicine in Europe is entitled to practice without any limitations.**
- **Even considering the circumstances the FVMZ should look for possibilities to increase the number of members of the teaching staff holding a Diploma of the European Board of Veterinary Specialisation (EBVS) by a) encouraging postdoctoral students and young faculty members to do a Residency Program and take the Diplomate exam, and b) helping the few Diplomates among the staff to develop EBVS internships or residency programs.**

# 13 RESEARCH

## 13.1 Findings

Taking into consideration the previous suggestions given by the EAEVE, the Committee for projects set the Faculty priorities for a five-year period (2007-2012). According to these priorities six programme clusters were decided.

- Hygiene, Quality and Safety of foodstuffs of animal origin in the frame of EU
- Swine health and breeding: immunologic, biotechnological and biomedical criteria
- Comparative oncology
- Improving fertility in production cows
- Health of birds, humans and environment

- Protozoan diseases - from epizootiology to therapy
- Applied biomedical research on game in Croatia

The involvement of students in scientific research has improved in the last decade.

Students are entitled to do a thesis. Subjects of these are decided with tutors. The majority of those (60%) are linked to clinical topics. The best students are selected to be demonstrators.

Among all student works a Rector's award Committee chooses Top-ten FVMZ scientific works which are qualified for the final round at the University of Zagreb, and a University committee chooses the best student works for the Rectors' Award. Regulation on the FVMZ Awards prescribes the rules for choosing the best research works which will be granted the Deans' Award. Then the changes can be seen through a significant increase in the number of original theses, increase in the number of demonstrators and increase in the number of students awarded for original scientific research.

The number of scientific papers co-authored by students and teachers of the Faculty in the last three academic years is displayed in the SER and shows an increase.

Also, the Faculty encourages scientific research of students within the framework of summer international schools, during which the FVMZ students, along with their international colleagues, are introduced to the scientific research methods in the field of Farm animals & Horses, Small animal practice and Exotic & Wild animals.

Thanks to the clusters, research efforts are now much more cohesive

Improvement of scientific research is one of the strategic guidelines of the Faculty, as listed in the Strategic Plan of the Faculty Development in subchapter 7.2 *Improvement of scientific activities* (page 19) which implies more intensive involvement of students in scientific research at the Faculty. Besides, there are currently 2 post-graduate systems being operated: One is the PUS-Post-graduate specialization studies-, the other one is the DSVS.

The sources of funding for graduate programs are not clear. The sources of funding for the post-graduate programs are three folds:

- Scholarship for young researchers exempting them to pay the costs of the doctoral study (Ministry MZOS)
- World Bank "sponsoring" the employees of Agriculture ministry
- Sponsorship through private companies

Altogether there are currently 128 doctoral candidates (PhD).

### **13.2 Comments**

Further development of research and linkage with clinicians is encouraged through the Veterinary science and profession meeting that happens bi-annually

It is the opinion of the team, that the requirements regarding Research as they are laid down in Annex I of the SOP are met.

### **13.3 Suggestions**

- None

## EXECUTIVE SUMMARY

The visit was carried out in a very cordial, friendly and professional atmosphere and the team was professionally treated and served throughout the entire site visit and supplied with all further information asked for.

The Self-evaluation report was sent on time and contains a substantial amount of information which resulted very helpful to explain the status of the veterinary school in Zagreb and all aspects of the veterinary training programme offered to the students. The team detected some misunderstandings in the application of annex II of the SOP with regard to the non-inclusion of hours of supervised practical training performed outside the Faculty and the inclusion of hours of self-study of the students as hours of self-directed learning in Tables 4.1, 4.2, 4.3 and 4.4 which required a correction of these tables and recalculation of those indicators derived from (R6, R7, R8, R9 and R10). These corrections and recalculations are added as annexes to this report.

The team was really impressed with the improvements made by the Faculty since the last evaluation and we take pride in having met some good and enthusiastic colleagues and students.

A rather complicated organization focused on teaching and research but also to some extent service to the community (6 accredited laboratories) has given the Faculty its good position. Apart from this the financial status of the faculty is relatively healthy, and the Faculty has benefitted from national and EU grants allowing for high quality renovation and construction of new teaching facilities.

With an on-going process of renovation the framework for high quality research, clinical activities and teaching will be fully in place in a few years given the present pace of renovation. This will be beneficial to students, animal owners, and community.

The Faculty has a list of 6 major problems (page 26, SER) and other proposals of future changes that will have a substantial effect on the establishment (pages 147 and 168, SER).

However, for the quality of training of food producing animals (production, clinic) the Faculty needs to prioritize an extensive improvement program including the construction of the Teaching Farm in DugoSelo.

There is a variation in the quality of practical clinical teaching among different clinical units and disciplines. The clinical caseload in some areas (Gynaecology and Horse Clinic) should be improved. When looking at all the clinics together, the small animal caseload should be regarded as excellent

The move to the new Isolation facilities should be prioritized.

Diagnostic Imaging should be urgently renovated and provided with modern equipment such as computer tomography. Small animal clinic for internal diseases should be refurbished and extended and a centralized emergency clinic and Intensive Care Unit should be implemented.

The faculty benefits of the support from the university in an area like the library, which is of outstanding standard.

The team was not been satisfied with the general level of safety procedures. In general the team noticed that eye washers were not available in all laboratories, escape plans and escape signs were not in place in all areas, ventilation hoods were not available or functioning correctly in all places and, finally, the faculty lacks a strategy for adapting the facilities to disabled people. The team strongly suggests that the faculty take up this task immediately in a professional way e.g. by establishing a strong safety and bio-security committee with executive power. This might best be done with external assistance linking to national and EU legislation.

Veterinary medicine is a fast developing field. New integrated concepts, like stable to table approaches, herd health management, veterinary public health, and animal welfare have emerged and become important. The Faculty **must** develop a biosecurity strategy for the Faculty premises, the clinics, the ambulatory mobile clinic and the farms to ensure appropriate protective measures for the staff and students, disinfection of premises and vehicles and good isolation protocols for patients with infectious diseases, as well as a contingency plan to deal with any outbreak of notifiable diseases, zoonoses or emerging disease.

## Annex 1 Indicators

Ratio for Zagreb, Croatia, (Budapest June 2012 denominators)	Numerator/Denominator calculated by Faculty	1/Denominator faculty figures	Established range of denominators	Notes
R1 p194 SER	166/613	1/3.69	8.832 (UL)	Above level = better than
R2 p194 SER	291/1043	1/3.58	9.619 (UL)	Above level = better than
R3 p194 SER	125/613	1/4.90	11.389 (UL)	Above level = better than
R4 p194 SER	166/75	1/0.45	2.203 (UL)	Above level = better than
R5 p194 SER	166/125	1/0.75	0.474 – 1.944 (Range)	inside range
R6 p108 SER Corrected annex	1648-1698/2649-2702 depending on the study track	1/1.5-1.6 depending on the study track	0.576 (LL)	Above level = better than
R7 p108 SER Corrected annex	1335-1372/1310-1367 depending on the study track	1/0.9-1.0	1.952 (UL)	Above level = better than
R8 p108 SER Corrected annex	48-82/4932-4935 depending on the study track	1/60-102	2.576-103.746 (Range)	Within range
R9 p108 SER Corrected annex	359/4932-4935	1/13.74-13.75	0.725-98.437 (Range)	Within range
R10 p108 SER Corrected annex	359/166	1/0.46	0.061-0.881 (Range)	Within range
R11 p166 SER	98/166	1/1.69	0.956 (LL)	Above level = better than
R12 p166 SER	98/5202	1/53	7.345 (LL)	Above level = better than
R13 p166 SER	98/537	1/5.47	0.307 (LL)	Above level = better than
R14 p166 SER	98/284	1/2.89	2.590 (LL)	Above level = better than
R15 p166 SER	98/754	1/7.69	0.505 (LL)	Above level = better than
***R16 p166 SER Corrected by FVMUZ	98/11250	1/114.8	43.462 (LL)	Above level = better than
R17 p166 SER	98/5	1/0.051	0.040 (LL)	Above level = better than
R18 p166 SER	98/135	1/1.37	0.998 (LL)	Above level = better than
R19 p166 SER	98/220	1/2.24	0.547 (LL)	Above level = better than
R20 p166 SER	98/735	1/7.5	1.498 (LL)	Above level = better than

\*\*\* The FVMZ computer program registered all examination (or special exam) in every department working at the hospital. Consequently the FVMZ is not able to list all patients as rule that one animal is one patient. The FVMZ recalculated indicator R16 estimating all examinations (2 or more) as one clinical visit, for example; one dog who

**was vaccinated in one calendar year and came later on surgery consultation and cardiology special examination was listed as one visit and one case in case log of FVMZ.**

## **Annex 2 Listing of Major Deficiencies**

*(Note: Each Deficiency is listed under the relevant paragraph below of the Directive 2005/36)*

**1)** The training of veterinary surgeons shall comprise a total of at least five years of full-time theoretical and practical study at a university or at a higher institute providing training recognised as being of an equivalent level, or under the supervision of a university, covering at least the study programme referred to in Annex V, point 5.4.1. The content listed in Annex V, point 5.4.1 may be amended in accordance with the procedure referred to in Article 58(2) with a view to adapting it to scientific and technical progress. Such updates may not entail, for any Member State, any amendment of its existing legislative principles relating to the structure of professions as regards training and conditions of access by natural persons.

**2)** Admission to veterinary training shall be contingent upon possession of a diploma or certificate entitling the holder to enter, for the studies in question, university establishments or institutes of higher education recognised by a Member State to be of an equivalent level for the purpose of the relevant study.

**3)** Training as a veterinary surgeon shall provide an assurance that the person in question has acquired the following knowledge and skills:

**a)** Adequate knowledge of the sciences on which the activities of the veterinary surgeon are based;

**b)** Adequate knowledge of the structure and functions of healthy animals, of their husbandry, reproduction and hygiene in general, as well as their feeding, including the technology involved in the manufacture and preservation of foods corresponding to their needs;

**c)** Adequate knowledge of the behaviour and protection of animals;

**d)** Adequate knowledge of the causes, nature, course, effects, diagnosis and treatment of the diseases of animals, whether considered individually or in groups, including a special knowledge of the diseases which may be transmitted to humans;



**e) Adequate knowledge of preventive medicine;**

- 1. It is the opinion of the team, that the requirements regarding Physical Facilities in general with respect to safety and health procedures as they are laid down in Annex I of the SOP are not met and that this may warrant a Major Deficiency. Chapter 4.4.3.**

**In the opinion of the team this major deficiency also negatively affects the acquisition of the following practical competencies addressed in Annex IV of the SOP (List of Recommended Essential Competencies at Graduation: “Day-One Skills”):**

**2.3.4. Follow correct procedures after diagnosing notifiable, reportable and zoonotic diseases.**

**2.3.19. Advise on, and design of preventive and prophylactic programmes appropriate for the species (herd health management) and commensurate with accepted animal health, welfare and public health standards, seeking advice and assistance where necessary from professional colleagues.**

**2.3.20 Minimise the risks of contamination, cross infection and accumulation of pathogens in the veterinary premises and in the field.**

**f) Adequate knowledge of the hygiene and technology involved in the production, manufacture and putting into circulation of animal foodstuffs or foodstuffs of animal origin intended for human consumption;**

**g) Adequate knowledge of the laws, regulations and administrative provisions relating to the subjects listed above;**

**h) Adequate clinical and other practical experience under appropriate supervision.**

### **Annex 3 Student`s Report**

The student, as all team members, was very active and offered good observations and contributions that have been added within the text in the single chapters.

**ECOVE DECISION: CONDITIONALLY APPROVED**

**Major deficiency confirmed: The requirements regarding physical facilities with respect to safety and health procedures are not met.**