

# VET-PROFILES

Version: English (Original-Version)

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## 0 Introduction

VET-PROFILES are derived from the **P**rincipal **R**elevant **O**bjectives and a **F**ramework for **I**ntegrative **L**earning and **E**ducation in **S**witzerland (PROFILES) developed for human medicine. They describe the competence-based learning objectives for students after completing the master study in veterinary medicine.

The document describes the most common fields of competence (roles) in which veterinarians have to act after graduation. It lists general competences and skills, which enable graduates to function in these different roles. In addition to specific veterinary skills, the document lists competences in veterinary science, communication, collaboration (teamwork), health care, professional conduct, and lifelong learning.

The study of veterinary medicine covers a broad spectrum of animal species and disciplines. It intends to prepare students for a wide variety of clinical and non-clinical professions. Post-graduate continuing education or specialization are essential components of the veterinary profession in any given field. At the beginning of their professional career, veterinarians still need supervision for many professional activities. There are, however, specific situations they have to deal with and tasks, which have to be fulfilled with a high degree of autonomy, meaning at least under limited (distant) or direct supervision, in the most common species.

In clinical practice, veterinary graduates are typically employed as assistants. Supervisors consider whether to delegate professional activities to them according to their competences. Graduates are generally expected to be able to solve basic clinical problems without direct supervision by their peers. Thus for clinical situations, veterinary curricular education has to ensure professional "entrustability" for a range of procedures and situations veterinarians are expected to perform directly after graduation. Further qualification in clinical professions is achieved as part of the life-long learning during the profession.

In many clinical and non-clinical professional fields, graduates typically enroll in supervised post-graduate training before being able to work independently. Such training is typically divided into early (e.g. internship or doctoral study) and advanced phases (e.g. residency or post-doc). In disciplines requiring such training the veterinary curriculum ensures that graduates can enter internationally offered training programs.

In Chapter 2, VET-PROFILES define the essential competences to be reached by the graduates as *Entrustable Professional Activity (EPAs)*. On day 1 of their professional activities, graduates are expected to perform the tasks listed here with a certain degree of independence.

The goal is the ability of the graduate to rapidly adapt to most work environments encountered after graduation. EPAs are "entrusted" when a supervisor is confident that the trainee demonstrates the knowledge, skills and attitude required for the task and can be trusted to seek assistance when needed. This "entrustability" is acquired progressively over the curriculum and instructors assess the trainee's performance over time before finally certifying it.

VET-PROFILES list core EPAs that reflect the most common activities expected from the graduates at the start of their professional career.

These include:

- essential day-1 skills,
- high-risk or error-prone tasks,
- tasks that are exemplary of a number of veterinary roles.

The list of skills required for these core EPA's is not intended to be exhaustive or prescriptive. It describes the minimal and essential competences, the student should acquire during the veterinary curriculum and which should be assessed by their teachers.

VET-PROFILES allows curricular planning, directs students towards their future professional roles and towards essential knowledge and competences they have to acquire. VET-PROFILES does not focus on individual subjects/disciplines taught in the curriculum. Basic natural and veterinary sciences are the foundation of all EPA's.

Specific aims and learning outcomes for all individual subjects (or teaching modules encompassing several subjects, e.g. organ blocks) are listed in complementary documents at faculty level. Learning outcomes from these documents refer to the individual EPA's and competency-fields defined in VET-PROFILES. This allows teachers to plan, coordinate and regularly adapt their teaching program in the context of the curriculum. For the student, this will underline which basic knowledge is important for which professional activity.

## Vetsuisse-Graudate-Competences

### Chapter 1

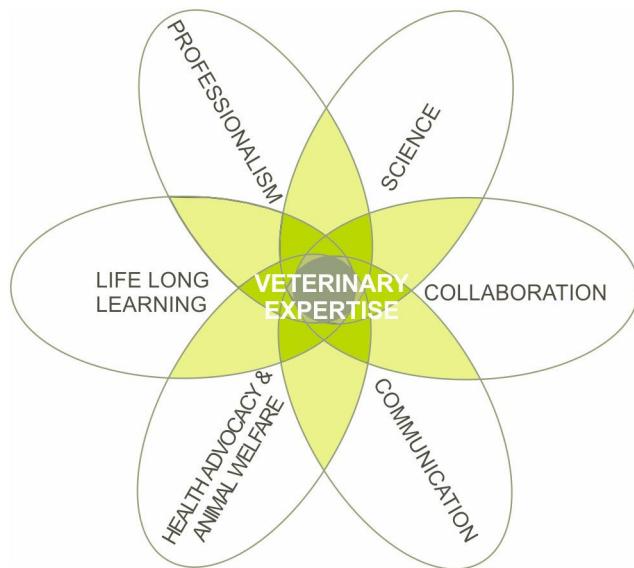
#### 1 General fields of competence

These fields represent those in which a veterinary graduate is typically expected to perform shortly after graduation. In each of these fields, graduates have to acquire basic competences allowing them to start their profession and to gradually increase these competences as required for their particular employment.

The general fields of competences are:

1. Veterinary Expertise
2. Veterinary Science
3. Communication
4. Collaboration/Teamwork
5. Health Advocacy and Animal Welfare
6. Professional Attitude
7. Life-long Learning

It is important to notice, that this section does not provide an explicit and comprehensive list of discipline-related knowledge. The fields are partly overlapping in a way that particular skills are needed in more than one of them (e.g. communication). Thus, there is a certain degree of redundancy between the described competences.



**Flower diagram** depicting core competences of a veterinarian. Veterinary expertise takes the central position. The size of the ellipses does not reflect the relative importance of each field of competence.

## 1.1 Veterinary Expertise

Veterinary expertise is the central competence for which the curriculum prepares for. The word expertise encompasses the role of a veterinarian during daily work where she/he is the responsible person for animal health and welfare related issues.

Veterinarians have a broad knowledge of animal health and welfare. They collect information from different sources, perform targeted examinations and initiate further investigations. They interpret results and findings and come to science-based conclusions. They initiate treatments or other measures, check whether results are appropriate and act according to current laws.

**Graduates are able to:**

- explain the structures and underlying mechanisms governing the development, function and behavior of animals, from molecular level to the whole organism,
- integrate the knowledge of basic (veterinary) sciences into their reasoning and the selection of relevant procedures and investigations,
- practice evidence based veterinary medicine,
- incorporate and apply the principles of biomedical, clinical, and animal ethics in their daily work,
- respect legislation relevant to their profession.

## 1.2 Veterinary Science

Veterinarians possess broad knowledge and skills, which enable them to support biomedical research or to enter careers in clinical and biomedical research. Here, they utilize their basic understanding of biomedical and animal sciences. They are competent to enter post-graduate research training programs and gradually develop additional scientific competences.

**Graduates are able to:**

- apply critical scientific thinking and veterinary knowledge to research approaches involving animals,
- include ethical reasoning in relation to the use of animals in research and act based on the 3R principles (replace, refine, reduce),
- acquire, understand and communicate scientific knowledge,
- enter internationally offered doctoral research programs.

## 1.3 Communication

Veterinarians are expected to establish and maintain relationships with clients, collaborators, and different stakeholders in their field of employment. They have to be able to adapt their communication to a variety of settings. In clinical settings, veterinarians use client-centred communication by exploring the patient's clinical signs and by actively listening to the client's experience with the animals' illness. They are expected to explore the owner's perspective with empathy. Veterinarians also have to engage in effective oral, written, and electronic communication with other professionals related to all aspects of veterinary medicine.

**Graduates are able to:**

- maintain therapeutic and welfare management relationships with clients based on mutual understanding, empathy, and trust,
- obtain detailed case specific information from clients,
- achieve understanding and compliance of clients and other involved persons to procedures and prescriptions
- educate clients and explain risks, benefits, alternatives and rationale for the proposed options,
- communicate adequately orally and in written or electronic form with clients, professional colleagues, experts from related fields, health authorities and scientists,
- obtain information from multiple sources, including telemedicine and current digital technologies,
- prepare documentation using terminology appropriate for the intended audience,
- ensure that their documentation fulfills professional and legal requirements.

## 1.4 Collaboration/team work

Veterinarians are expected to work effectively in teams. Here, they should be able to take responsibility for their team and the tasks to be achieved. This requires basic competences for working in teams.

**Graduates are able to:**

- respect the different roles, responsibilities, perspectives and resources taken by individual team members,
- use their communication skills to focus team members on a common goal and to encourage collaborative activity,
- work in a busy or stressful situation,
- function as leader or team member based on experience, skills and context,
- recognize the time point when to refer a case to or discuss findings with a collaborator with additional expertise,
- take over responsibilities of team members in case of emergencies.

## 1.5 Health Advocacy and Animal Welfare

Veterinarians possess knowledge and competences that provide unique perspectives on veterinary and human public health and animal welfare. They have to recognize and actively promote the importance of veterinary public health, preventive veterinary healthcare, surveillance, food safety and animal welfare. They have to be able to do this at the level of an individual animal, animal groups and animal population as well as along the food chain.

**Graduates are able to:**

- recognize the central role and functions played by primary veterinary care and preventive medicine in the animal population and its effect on human health and the environment,
- consider the population perspective as a core aspect of veterinary public health,
- apply of the One Health principle,
- recognize situations which affect animal welfare or which violate animal rights and act accordingly,
- work with relevant stakeholders to identify the determinants of animal health and welfare and food safety,
- recognize situations that require immediate action towards restoring animal welfare,
- recognize situations that violate animal rights and act accordingly.

## 1.6 Professionalism

This encompasses professional behavior and attitude expected from a veterinarian. It includes ethical reasoning, reflective practice, self-regulation, professional development, personal wellbeing and a basic understanding of socio-economical aspects in the daily work.

**Graduates are able to:**

- demonstrate accountability to their profession, respect their legal and professional obligations and codes,
- respect clients' privacy and confidentiality,
- work according to general regulations of work safety,
- work according to the economic principles of veterinary enterprises (e.g. practice),
- recognize and respond appropriately to conflicts of interest (incl. seeking support from colleagues or peers),
- ask for and respond to feedback on performance,
- recognize their own professional limits, and seek assistance and supervision when appropriate.

## 1.7 Life-long learning

Life-long learning and continuing education is an essential part of the veterinary profession. Veterinarians must develop and maintain critical thinking about the scientific information and progress in the veterinary field. Students participate in the general culture of life-long learning at the Vetsuisse-Faculty. Each student develops her/his way of self-directed learning and receives regular feedback on her/his development.

**Graduates are able to:**

- understand the necessity of life-long learning and continuous post-graduate education,
- use self-directed learning to develop and expand her/his competences,
- plan their own professional development and continuing education.

## Chapter 2

### 2 Entrustable Professional Activities (EPA)

EPA Nr.	Title
1	Name and describe the body structures and functions of healthy and diseased organisms
2	Take a clinical history
3	Handle and restrain animals
4	Perform a clinical or post mortem examination and assess the health status and well-being of an animal or groups of animals
5	Formulate a problem list and prioritize differential diagnoses
6	Perform common clinical procedures
7	Recommend diagnostic and screening tests, collect and handle samples and use equipment
8	Interpret results of diagnostic and screening tests
9	Identify a patient requiring urgent / emergency care and initiate emergency care
10	Develop a management/therapy plan, safely prescribe and administer medications or accompanying measures in common situations
11	Document veterinary medical findings
12	Communicate effectively with animal owners, veterinary medical professionals and different stakeholders
13	Participate in animal welfare and public health
14	Acquire, apply and communicate scientific knowledge

## **2.1 Name and describe the body structures and functions of healthy and diseased organisms**

The student describes the structures and the functions of the body (from molecules to the entire organism). She/he uses this knowledge to identify and describe deviations from the healthy and physiological situation.

### **Required Skills:**

- apply the basic knowledge of structures and functions (from molecules to whole organisms) to the context of a veterinary problem
- describe functional and morphologic changes and explain their consequences on the entire organism
- explain the impact of genetics, epigenetics, environment, microorganisms, nutrition, wellbeing, as well as pharmacological interventions on body structures and functions.

## **2.2 Take a clinical history**

The student obtains a complete and accurate history in an organized fashion. She/he seeks secondary sources of information when appropriate. The student is able to adapt communication methods to the individual client, case or situation.

### **Required Skills:**

- apply client-centered interview skills,
- use clinical reasoning in obtaining information,
- explore complaints and situations in animals at the individual and herd/group level,
- identify issues not mentioned spontaneously by the owner,
- identify and use alternate sources of information to obtain history.

## **2.3 Handle and restrain animals**

The student assesses animal behavior before approaching and during handling of animals. She/he is able to use approved handling and restraint techniques for a range of situations such as clinical examination, sample collection, administration of medication or carrying out medical procedures. The student demonstrates the necessary preparations for safe handling and is able to instruct others.

### **Required Skills:**

- ensure appropriate hygiene and protective procedures before, during and after handling,
- use manual restraint of animals and a range of selected restraining devices in a safe and appropriate manner,
- instruct others in techniques for safe handling and manual restraint of animals,
- identify situations where chemical restraint of an animal is indicated and choose an appropriate method,
- lead, move and lift animals using a range of aids and approved manual handling and lifting techniques,
- take species, environmental factors, patients' physical condition, e.g. when handling neonates, pregnant or sick patients into account,
- explain handling of laboratory and exotic animals.

## 2.4 Perform a clinical or post mortem examination and assess the health status and well-being of an animal or groups of animals

The student is able to perform a general physical or a post-mortem examination of an individual animal. The student assesses the health status and well-being of an individual animal or group of animals and identifies risk factors potentially contributing to an impaired health or well-being of animals. On the herd level, the student is able to expand the examination to the animals' environment and management.

### Required Skills:

- assess the signalment, body condition score, muscle condition score, and general behavior of an animal or of groups of animals,
- perform a physical examination, identify and describe normal and abnormal findings,
- perform an examination of the animals' environment, feeding and management on herd level,
- initiate further examination and required diagnostic procedures based on an informed decision,
- demonstrate the effective use of appropriate techniques and devices required for further examination of animals, the environment and the management,
- assess and analyze health indicators and production data,
- use herd management data ("Kennzahlen") for interpretation of herd problems,
- evaluate animal diets and feeding practices,
- perform a post mortem examination of companion and farm animals
- identify and describe macroscopic changes in organs and tissues and formulate an appropriate macroscopic diagnosis.

## 2.5 Formulate a problem list and prioritize differential diagnoses

The student is able to synthesize essential information from previous records, history, physical or post-mortem examination, and initial diagnostic evaluations to propose a list of differential diagnoses.

### Required Skills:

- assess the degree of relevance and urgency of clinical complaints, clinical signs and diagnostic findings,
- list the most common differential diagnoses for common problems
- compile and adapt a comprehensive list of differential diagnoses for clinical and post-mortem findings,
- integrate the epidemiological information (probability of diseases) into clinical reasoning,
- recognize and identify potential zoonotic hazards,
- recognize and identify potential intoxication,
- recognize and identify problems relevant to biosafety.

## 2.6 Perform common clinical procedures

The student adequately prepares herself/himself and the animal for common veterinary procedures. She/he applies essential knowledge of anatomy, physiology, indications, contraindications, risks, benefits and alternatives for these procedures. The student takes steps to avoid or handle complications of procedures.

### Required Skills:

- perform common simple grooming procedures and prepare for simple interventions according to species,
- organize and maintain principles of asepsis and maximize patient and environmental safety during the procedure,
- administer medication and fluid therapy by appropriate route (e.g. oral, topical, subcutaneous, intramuscular, intravenous, intraperitoneal, intra-vaginal, rectal),
- carry out routine diagnostic imaging,

- choose appropriate types and methods of anesthesia adapted to the species, type of intervention and animal's condition,
- use of anesthesia equipment, prepare animal for and monitor anesthesia, assist in post-anesthetic recovery and prepare for and prevent post-procedure complications,
- prepare for aseptic surgery
- perform basic wound revision including sutures and simple surgeries,
- apply and manage various forms of bandages and dressings,
- perform euthanasia,
- explain common medical and surgical procedures.

## **2.7 Recommend diagnostic and screening tests, collect and handle samples and use equipment**

The student is able to recommend appropriate first-line, diagnostic evaluation for a patient, a herd or a population of animals. She/he is able to collect and submit appropriate samples from living and dead animals for further testing. She/he correctly handles basic laboratory equipment and performs commonly used standard tests.

### **Required Skills:**

- give an informed rationale for further diagnostic testing,
- incorporate sensitivity, specificity and prevalence in recommending and interpreting common tests,
- implement a sampling strategy (individual and groups of animals),
- select and use appropriate material and methods,
- choose appropriate sample size/quantity (including minimal amount/size of sample),
- apply appropriate hygiene and safety rules to minimize the risk of contamination, infection and accumulation of pathogens,
- prepare and use diagnostic imaging equipment,
- obtain routine tissue and body fluid samples for diagnostic purposes using appropriate techniques,
- preserve, label, pack and send biological samples,
- perform basic tests routinely performed in veterinary practices on clinical samples like blood, urine, milk, feces (including use of common equipment),
- perform a basic cytological and histologic examination.

## **2.8 Interpret results of diagnostic and screening tests**

The student can interpret ancillary test results from laboratories and integrate these findings in her/his clinical reasoning. The student discerns urgent from non-urgent results and responds correctly.

### **Required Skills:**

- analyze first-line diagnostic imaging results,
- interpret a report of a diagnostic laboratory in the context of the clinical problem,
- analyze animal and production associated recordings,
- use reference values and distinguish common, insignificant abnormalities from clinically relevant findings,
- incorporate differences in values and thresholds regarding species, breed, sex and age in the interpretation of test results,
- explain interference of laboratory assays due to changes in sample quality.

## **2.9 Identify a patient requiring urgent / emergency care and initiate emergency care**

The student is able to assess, recognize and prioritize normal and abnormal vital signs in animals. She/he prioritizes patients who need immediate care and initiates interventions and management. The student is able to perform basic first aid and knows when to seek assistance from others. She/he monitors response to initial interventions and adjusts the plan accordingly.

### **Required Skills:**

- assess the severity of an animal's situation / illness,
- obtain and monitor vital parameters of animals,
- identify common life-threatening and serious conditions,
- apply basic emergency procedures,
- explain possible underlying etiologies of the animal's deteriorating condition,
- initiate an intervention plan for the decompensating patient and seek timely help,
- identify the need for rapid transfer of patient to another facility,
- identify when euthanasia is indicated.

## **2.10 Develop a management/therapy plan, safely prescribe and administer medications or accompanying measures in common situations**

The student is able to establish a management/therapy plan tailored to the differential diagnosis list. The student is able to choose correct medications and can perform basic therapeutic measures. She/he can write a prescription and suggest dietary measures.

### **Required Skills:**

- establish a management plan at the individual and herd level,
- incorporate animal welfare as well as client needs and capabilities in a diagnostic and treatment plan,
- explain the indications, risks and benefits of recommended treatment,
- explain the indications, unwanted side effects and drug-drug interactions, as well as benefits of pharmacotherapy,
- explain the indications, risks and benefits of complementary medicine,
- use veterinary medicinal products and pharmaceuticals correctly, including the use of veterinary pharmaceuticals in accordance with legislation (Heilmittelgesetz HMG, Tierarzneimittelverordnung TAMV, Betäubungsmittelgesetz BtmG),
- apply current regulations regarding on-label, off-label and use of drugs under the cascade,
- use antimicrobials prudently and consider the risk of antimicrobial resistance,
- treat and prevent pain,
- explain on-farm food safety practices,
- advise on preventive and prophylactic programs according to the species, legislative animal welfare guidelines (TSchG, TSchV), demographics, risk factors and animal health and welfare and the owner's preference,
- recommend appropriate diets and supplements to ensure animal health, animal product quality, consumer health and sustainability,
- recommend and explain appropriate therapeutic and preventive dietary treatment.

## 2.11 Document veterinary medical findings

The student is able to accountably document findings of a veterinary examination, in clinical and non-clinical settings.

**Required Skills:**

- document test results, problem lists, differential diagnosis and communication using professional terminology,
- prioritize and synthesize information into a report,
- write a diagnostic report with a basic interpretation and discussion of the findings,
- compile accurate, legible, timely/daily documentation that includes institutionally and legally required elements,
- document the use of antimicrobial drugs and drugs regulated by legislation (BtmG),
- document and report unexpected side effects of pharmaceuticals.

## 2.12 Communicate effectively with animal owners, veterinary medical professionals and different stakeholders.

The student is able to gather information as well as to inform, guide and educate clients orally as well as in written form. She/he demonstrates respect for owner's preferences and confidentiality. The student is able to communicate effectively with different stakeholders related to all aspects of veterinary medicine, animal welfare and husbandry. She/he is able to select and to forward case-relevant information to (inter- and intraprofessional) specialists.

**Required Skills:**

- communicate effectively with clients in oral and written form adapted to the situation,
- advise clients and explain the risks, benefits and rationale for the proposed options,
- communicate difficult issues such as bad news ("breaking bad news"), or disclosing errors or adverse events (diagnostic and treatment failures, errors),
- compile information (oral or written) that is prioritized, relevant, precise and adapted to the situation and recipient,
- compile and negotiate sound arguments to support presented information/findings and diagnoses,
- Handle personal and professional, legal, and ethical standpoints and responsibilities appropriately.

## 2.13 Participate in animal welfare and public health

Veterinarians promote health and wellbeing of animals and humans as part of the One Health concept. The student is able to aid in national veterinary service tasks that relate to the promotion of animal and public health. She/he is able to participate appropriately in an epidemiological inquiry including collection, handling and transportation of appropriate specimens or samples. She/he is able to detect suspicious signs of transboundary animal diseases, zoonotic and food borne diseases and report them to the relevant veterinary authority. The student recommends disease prevention and control programs.

**Required Skills:**

- consider animal welfare aspects in recommending management and feeding practices,
- explain the integration between animal health controls and veterinary public health, the role of veterinarians in conjunction with physicians, public health practitioners, and risk analysts to ensure a high level of food safety, animal and public health,
- apply general principles of epidemiology,
- recommend appropriate diagnostic and therapeutic tools to prevent and combat transboundary animal diseases, zoonotic and food borne diseases,

- describe established programs for the prevention and control of common zoonotic, contagious or emerging/re-emerging diseases,
- explain the importance of animal genetics and breeding with respect to animal production and animal welfare,
- identify diseases of animals which require notification by the veterinarian to the national authority,
- recommend on-farm bio-safety and food-safety practices,
- describe the principles of slaughter inspection (ante mortem, post mortem), including animal welfare aspects,
- describe basic principles of animal health economics,
- perform animal welfare assessments,
- applying appropriate measures in cases of animal welfare violations,
- describe relevant legal issues concerning animal welfare, including animal experimentation, transport, housing, euthanasia.

## 2.14 Acquire, apply and communicate scientific knowledge

The student is able to find and correctly interpret scientific literature in particular relating to veterinary and biomedical topics. She/he is able to analyze data, communicate knowledge, and base decisions on scientific evidence. She/he has a general awareness of and appreciation for how research is essential to advance knowledge. The student is able to critically question new hypotheses or issues that affect her/his field of expertise and to employ new knowledge and tools for her/his professional activities.

### Required Skills:

- explain the necessity to formulate research questions and hypotheses,
- identify and use scientific databases and search engines to acquire relevant information,
- analyze scientific data by applying descriptive and basic statistics,
- critically analyze information/data for scientific evidence,
- apply the principles of scientific integrity,
- present and report data orally and in written form.