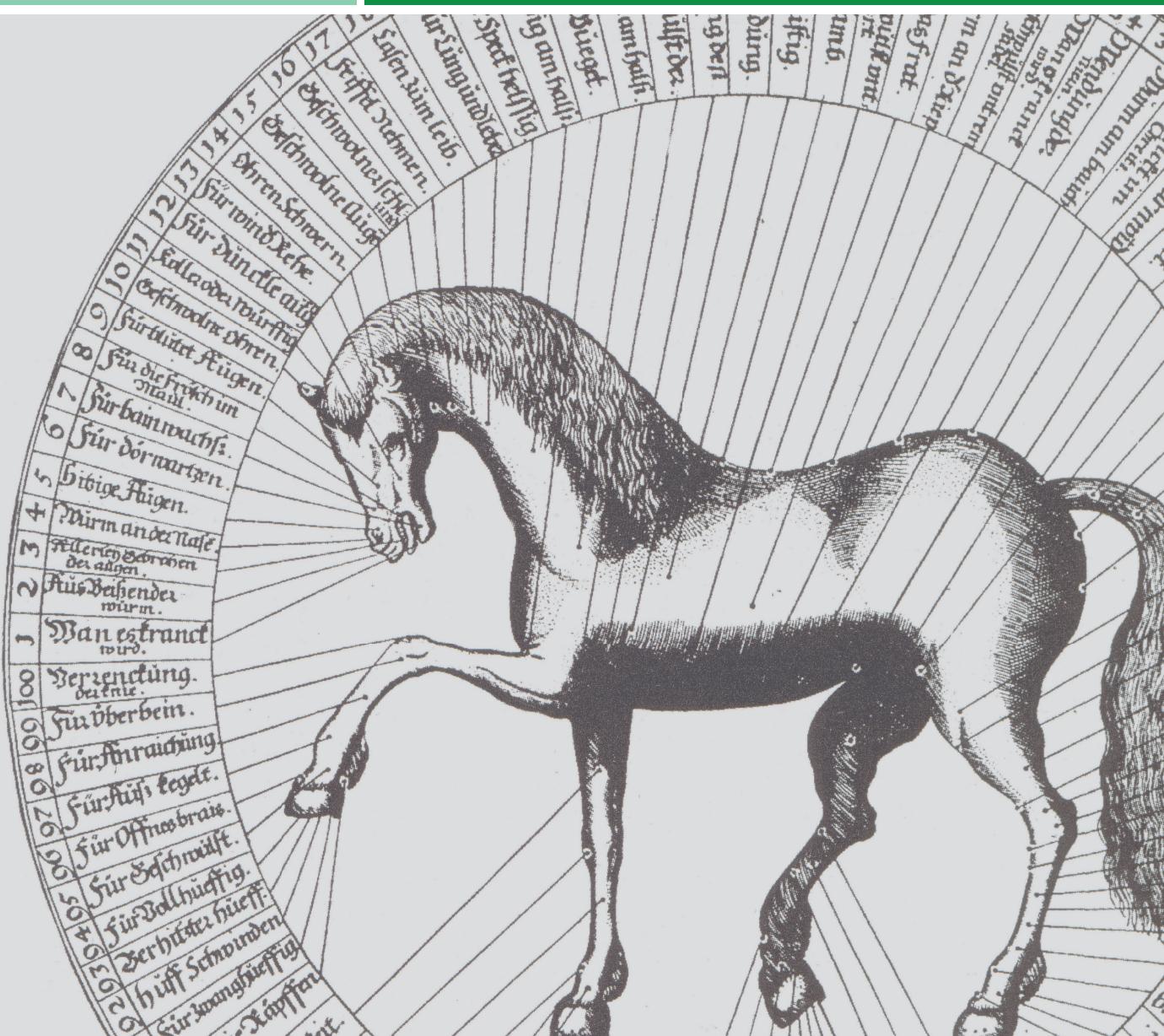




SELF- EVALUATION REPORT





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Introduction

The Faculty of Veterinary Medicine was founded in 1790 by Charles Theodore, Elector and Duke of Bavaria, to fight livestock epizootics and educate future veterinarians and hoof smiths for the cavalry. Only 20 years later, King Maximilian I completely restructured the now "Central-Veterinär-Schule". More than a century after its foundation in 1914, the veterinary school became faculty and part of the Ludwig-Maximilians-Universität (LMU) in order to receive the privilege to confer the title of "*doctor medicinae veterinariae*". Since its foundation, the main campus is located next to the English Garden in the Centre of Munich.

Main development since the last visitation

The Faculty of Veterinary Medicine of the LMU Munich was last evaluated and approved by the European Association of Establishments for Veterinary Education in 2002. As shortcomings observed by EAEVE at that time were recorded:

- *Two campuses* – Major progress has been achieved in planning one main modern campus in Oberschleißheim. The equine clinic premises have been completed and the clinic is now fully operational in Oberschleißheim. A new lecture hall has also been completed. Towards the end of this year, the new building for the microbiology will also be completed. Plans for all other facilities that still need to move to Oberschleißheim, except for the small animal clinic, have been completed, state funding has been allocated, construction is progressing and currently expected to be finalized in 2027, except for the Small Animal Clinic, that should be completed by 2030-32.
- *Lack of resource sharing between the two small animal clinics* – The Centre for Clinical Veterinary Medicine decided to merge the Clinic for Small Animal Medicine and the Clinic for Small Animal Surgery and Reproduction under one leadership (Prof. Katrin Hartmann) on April 1, 2023, subsequent to Prof. Meyer-Lindenberg's retirement. New faculty positions will be advertised within the upcoming months in the summer of 2022.
- *Lack of funding dedicated to the new premises* – Please see above; funding is allocated for construction of all facilities not completed yet with exception of the Small Animal Clinic. Planning for this last clinic move has already begun.
- *Teaching deficiencies in biochemistry* – The position for the professorship in biochemistry and chemistry is expected to be advertised in spring 2022 after approval of the Central University Administration (CUA) and the Bavarian State Ministry of Sciences and Arts. Prerequisites for this W3 professorship include an exceptionally qualified personality with outstanding international reputation. Excellent teaching skills at university level are expected.
- *Lack of an adequate lecture hall* – A new state of the art lecture hall for 300 students, fully equipped for innovative teaching including live presentation of small and large animal patients has been completed in Oberschleißheim and is extensively used since 2018.
- *Internationality should be improved* – Currently 10% of our veterinary students originate from 32 foreign countries located in Africa, the Americas, Asia and Europe, while 90% of our students are German.
- *Hiring qualified nursing staff in the clinics should have priority* – Full-time positions for non-veterinarians are directly controlled by the CUA. Numerous requests of the Dean's Office and the Directors of the Centre for Clinical Veterinary Medicine to increase our nursing staff have been declined by the CUA. Consequently, the Centre for Clinical Veterinary Medicine has hired on its own responsibility and negotiations with the CUA additional veterinarians and veterinary student workers financed with revenues



generated with clinical work to enhance patient care and mentoring of our veterinary students during their clinical rotation.

- *Government authorities must recognise the qualification of Diplomates for employment purposes and must tailor and recognise “resident” and “intern” as salaried short-term positions within the faculty* – The Centre for Clinical Veterinary Medicine currently supports numerous established residency programmes in various species-specific specialties (for example cardiology, dermatology, internal medicine, neurology, radiology, oncology, surgery and sports medicine and rehabilitation). All resident positions are salaried short-term positions.



1. Objectives, Organisation and QA Policy

1.1 Mission Statement and Objectives

The Faculty of Veterinary Medicine of the LMU Munich strives for excellence in all three pillars of academic life: research, teaching and service. Our objective is to provide teaching and service at the highest level possible and to conduct research to improve quality of life in animals and humans. We aim to teach scientific knowledge, practical skills and raise awareness for the high expectations towards our profession especially with regard to animal welfare and people skills. Our Faculty strives to create a learning environment for our students conducive to critical and independent thinking and lifelong development and learning. State-of-the-art veterinary medicine relevant to animal welfare, human well-being and care for the environment ("One Health") comprises:

- optimal patient care through world-class specialists in all fields of veterinary medicine practising a problem-based approach and evidence-based veterinary medicine;
- recognising and treating zoonotic diseases and conducting research of fundamental disease mechanisms and prophylactic measures to improve the health and well-being of humans;
- improving animal welfare through innovative research
- Ensuring and improving the production of safe and high-quality food of animal origin;
- interdisciplinary engagement with other academic stakeholders.

In the Federal Republic of Germany, the veterinary profession is subject to the Federal Laws applying to veterinary medicine (*Bundestierärzteordnung*, BTO). According to §5 of this law, veterinary education is structured and controlled by the Licensure Act for Veterinarians (*Verordnung zur Approbation von Tierärztinnen und Tierärzten*, TAppV), issued by the Federal Ministry of Nutrition and Agriculture (*Bundesministerium für Ernährung und Landwirtschaft*, BMEL). The objectives of veterinary education are stated in Section 1, §1, TAppV: "The objective of the training is an academically and practically trained veterinary surgeon who is capable of practising the veterinary profession responsibly and independently within the constraints of Section 1 of the Federal Veterinary Code and of undergoing further advanced training. The fundamental veterinary, scientific, interdisciplinary, methodological and practical skills, spiritual and ethical foundations and a professional attitude committed to the well-being of humans, animals and the environment shall be imparted as they are necessary for the entire scope of the veterinary profession to be practised responsibly, taken into special account the quality assurance." The theoretical framework to achieve these objectives is outlaid in Section 1, §2, TAppV, stating that veterinary training shall comprise an academic-theoretical component with a total of 3,850 hours of compulsory and elective courses and a practical component of 1,170 hours.

Our high standards of veterinary medical training provide excellent career opportunities in relevant professional fields for our students. We also offer a wide range of postgraduate training programmes in the basic sciences, collaboration opportunities with leading researchers in human medicine in the medical faculty of the LMU, the medical faculty of the Technical University Munich as well as related institutes such as for example the Helmholtz Institute Munich and the Max Plank Institute for Medical Research. In clinical small and large animal medicine, a wide array of residencies in many different specialties approved by the relevant European Colleges are offered. Habilitation programmes in basic sciences as well as clinical subjects are further opportunities for postgraduate students interested in an academic carrier. The core curriculum is in accordance with the laws and covers all the above-mentioned requirements. In addition, a Curriculum Committee comprised of faculty members from both Departments of the Faculty as well as student representatives meets regularly with the aim to further fine-tune and improve the veterinary curriculum.



1.2 Factual information

1.2.1 Details of the Establishment

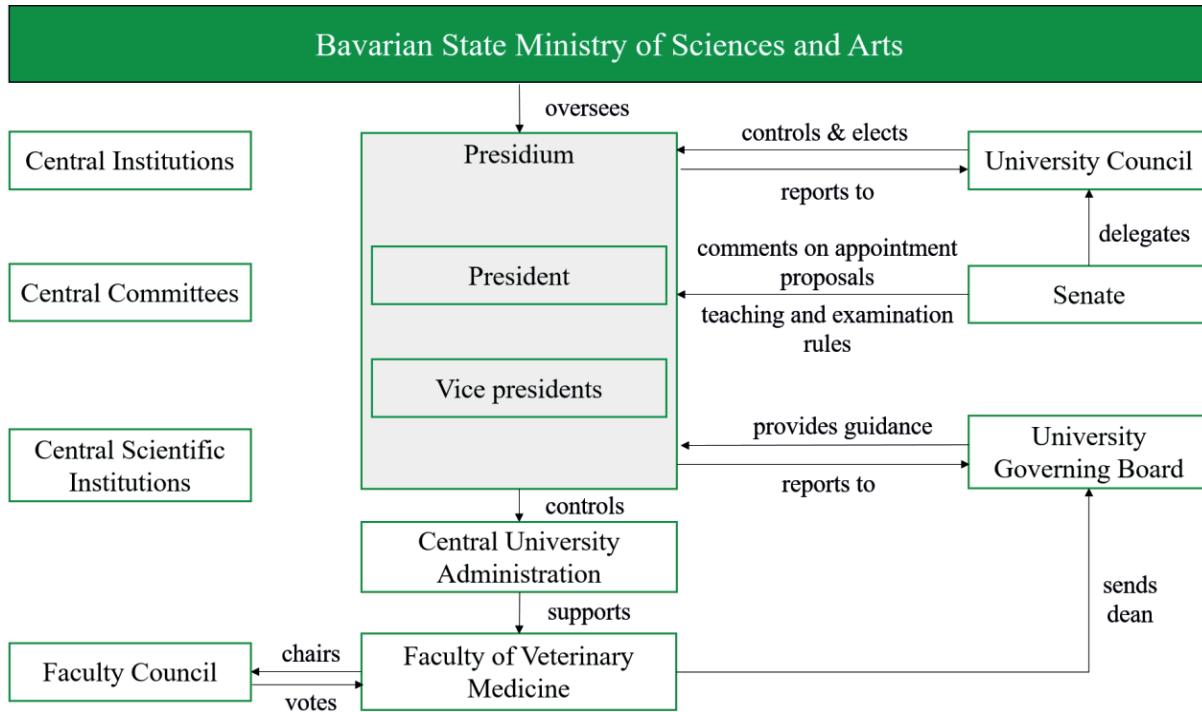
Details of Establishment	
Official name	Faculty of Veterinary Medicine, LMU Munich (<i>Tierärztliche Fakultät, Ludwig-Maximilians-Universität München</i>)
Address	Veterinärstrasse 13, 80539 Munich, Germany
Telephone	+49 (0)89 / 2180 - 2656
Fax	+49 (0)89 / 2180 - 992656
E-Mail	dekanat08@lmu.de
Website	www.vetmed.uni-muenchen.de
<i>Dean's office:</i>	
Dean	Prof. Dr. Reinhard K. Straubinger, Ph.D.
Vice-Dean	Prof. Dr. Susanne K. Lauer
Dean for Student Affairs	Prof. Dr. Thomas W. Göbel
Dean for Research	Prof. Dr. Markus Meißner

1.2.2 Authority overseeing the University

Authority overseeing the University	
Name	The Bavarian State Ministry of Sciences and Arts (<i>Bayerisches Staatsministerium für Wissenschaft und Kunst</i>)
Address	Salvatorstrasse 2, 80333 Munich, Germany
Telephone	+49 (0)89 / 2186 – 0
Fax	+49 (0)89 / 2186 – 2800
E-Mail	poststelle@stmwk.bayern.de
Website	www.stmwk.bayern.de

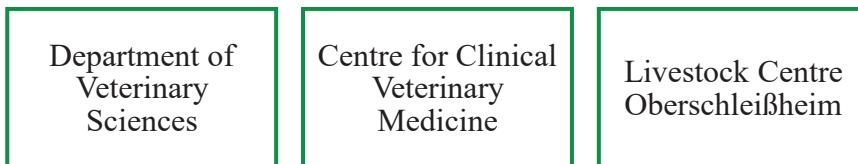


1.2.3 Organisational of the Establishment



1.2.4 Institutions of the Faculty

The Faculty of Veterinary Medicine is divided into three administrative bodies:



Department of Veterinary Sciences

Department of Veterinary Sciences	
Director	Prof. Dr. Cornelia A. Deeg
Vice-Director	Prof. Dr. Dr. h.c. Gerd Sutter
Head of Office	Dr. Andreas Schepermann
Telephone	+49 (0)89 / 2180 – 2531
Fax	+49 (0)89 / 2180 - 5905
E-Mail	geschaefsstelle@vetwiss.vetmed.uni-muenchen.de

The Department of Veterinary Sciences was established to ensure effective and flexible cooperation among the different institutes and facilities. The Department Council is entitled to decide on all matters of staff, as well as financial and building resources. The members of the Department Council are all professors, except for the representative of the non-professorial academic staff and the Women's Representative. The Director and Vice-Director are elected by the Department Council for two years.

The Dean of the Faculty is not eligible for these positions. One re-election is permitted. The Director acts on current affairs of the Department and carries out decisions made by the Department Council. The Director represents the Department of Veterinary Sciences towards other university bodies. Institutions belonging to the Department of Veterinary Sciences:



Anatomy, Histology and Embryology	
Interim Chair	Prof. Dr. Johann Maierl
Telephone	+49 (0) 89 / 2180 – 2563
Fax	+49 (0) 89 / 2180 – 2569
E-Mail	j.maierl@anat.vetmed.uni-muenchen.de
Physiology	
Chair	Prof. Dr. Cornelia A. Deeg
Telephone	+49 (0) 89 / 2180 - 2552
Fax	+49 (0) 89 / 2180 - 2554
E-Mail	deeg@tiph.vetmed.uni-muenchen.de
Physiological Chemistry	
Interim Chair	Prof. Dr. Herbert Kaltner
Telephone	+49 (0) 89 / 2180 - 2290
Fax	+49 (0) 89 / 2180 - 2508
E-Mail	kaltner@tiph.vetmed.uni-muenchen.de
Animal Nutrition and Dietetics	
Chair	Prof. Dr. Ellen Kienzle
Telephone	+49 (0) 89 / 2180 - 78700
Fax	+49 (0) 89 / 2180 - 78702
E-Mail	kienzle@tiph.vetmed.uni-muenchen.de
Food Safety and Food Analysis	
Chair	Prof. Dr. Claudia Guldmann, Ph.D.
Telephone	+49 (0) 89 / 2180 - 78500
Fax	+49 (0) 89 / 2180 - 78502
E-Mail	c.guldmann@ls.vetmed.uni-muenchen.de
Hygiene and Technology of Milk	
Chair	Prof. Dr. Dr. h. c. Erwin P. Märtylbauer
Telephone	+49 (0) 89 / 2180 - 78600
Fax	+49 (0) 89 / 2180 - 78602
E-Mail	e.maertlbauer@mh.vetmed.uni-muenchen.de
Molecular Animal Breeding and Biotechnology	
Chair	Prof. Dr. Eckhard Wolf
Telephone	+49 (0) 89 / 2180 - 76800
Fax	+49 (0) 89 / 2180 - 76849
E-Mail	ewolf@genzentrum.lmu.de
Animal Welfare, Ethology, Animal Hygiene and Animal Husbandry	
Chair	Prof. Dr. Michael H. Erhard
Telephone	+49 (0) 89 / 2180 - 78300
Fax	+49 (0) 89 / 2180 - 78333
E-Mail	m.erhard@tierhyg.vetmed.uni-muenchen.de
Palaeoanatomy, Domestication Research and History of Veterinary Medicine	
Chair	Prof. Dr. Joris Peters
Telephone	+49 (0) 89 / 2180 - 5710
Fax	+49 (0) 89 / 2180 - 6278
E-Mail	joris.peters@palaeo.vetmed.uni-muenchen.de



Institute for Infectious Diseases and Zoonoses

Bacteriology and Mycology

Chair	Prof. Dr. Reinhard K. Straubinger, Ph.D.
Telephone	+49 (0) 89 / 2180 - 2528
Fax	+49 (0) 89 / 2180 - 992528
E-Mail	R.Straubinger@lmu.de

Virology

Chair	Prof. Dr. Dr. h.c. Gerd Sutter
Telephone	+49 (0) 89 / 2180 - 2514
Fax	+49 (0) 89 / 2180 - 16576
E-Mail	sutter@viro.vetmed.uni-muenchen.de

Experimental Parasitology

Chair	Prof. Dr. Markus Meissner
Telephone	+49 (0) 89 / 2180 - 3622
Fax	+49 (0) 89 / 2180 - 3623
E-Mail	markus.meissner@para.vetmed.uni-muenchen.de

Pharmacology, Toxicology and Pharmacy

Chair	Prof. Dr. Heidrun Potschka
Telephone	+49 (0) 89 / 2180 - 2663
Fax	+49 (0) 89 / 2180 - 16556
E-Mail	potschka@pharmtox.vetmed.uni-muenchen.de

Fish Diseases and Fisheries Biology

Chair	Prof. Dr. Dušan Palić, Ph.D.
Telephone	+49 (0) 89 / 2180 - 2687
Fax	+49 (0) 89 / 2180 - 995362
E-Mail	d.palic@fisch.vetmed.uni-muenchen.de

Centre for Clinical Veterinary Medicine

Centre for Clinical Veterinary Medicine	
Director	Prof. Dr. Holm Zerbe
Vice-Director	Prof. Dr. Katrin Hartmann
Head of Office	Dr. Lars Fuchs
Telephone	+49 (0) 89 / 2180 - 6351
Fax	+49 (0) 89 / 2180 - 996351
E-Mail	geschaeftsstelle@vetklin.vetmed.uni-muenchen.de

The Centre for Clinical Veterinary Medicine (CCVM) was established to optimize effective and flexible use of all resources (personnel, finances, facilities). The CCVM Council consists of eight W3/C4 (full) professors presenting all clinics and institutes, five of the W2/C3 (associate) professors elected among peers, one representative of non-professorial academic staff and the Women's Representative. The Director and Vice-Director are W3/C4 professors elected by the CCVM Council for two years. The Dean of the Faculty is not eligible for these positions. Re-elections are possible. The directors can be voted out at any time by a 2/3 majority of the CCVM Council members. The directors act on current affairs of the CCVM and communicate decisions made by the CCVM Council. The Director represents the CCVM towards other university bodies.



Clinics and Institutes belonging to the Centre for Clinical Veterinary Medicine

Clinic for Small Animal Medicine

Chair	Prof. Dr. Katrin Hartmann
Telephone	+49 (0) 89 / 2180 - 2650
Fax	+49 (0) 89 / 2180 - 16501
E-Mail	hartmann@medizinische-kleintierklinik.de

Clinic for Small Animal Surgery and Reproduction

Chair	Prof. Dr. Andrea Meyer-Lindenberg
Telephone	+49 (0) 89 / 2180 - 2634
Fax	+49 (0) 89 / 395341
E-Mail	andrea.meyer-lindenberg@chir.vetmed.uni-muenchen.de

Clinic for Horses

Interim Chair	Prof. Dr. Gabriela Knubben-Schweizer
Telephone	+49 (0) 89 / 2180 - 78676
Fax	+49 (0) 89 / 2180 - 2161
E-Mail	gknubben@med.vetmed.uni-muenchen.de

Clinic for Ruminants with Ambulatory and Herd Health Services

Internal Medicine and Surgery of Ruminants

Chair	Prof. Dr. Gabriela Knubben-Schweizer
Telephone	+49 (0) 89 / 2180 - 78850
Fax	+49 (0) 89 / 2180 - 78851
E-Mail	gknubben@med.vetmed.uni-muenchen.de

Physiology and Pathology of Reproduction

Chair	Prof. Dr. Holm Zerbe
Telephone	+49 (0) 89 / 2180 - 78830
Fax	+49 (0) 89 / 2180 - 78851
E-Mail	hzerbe@med.vetmed.uni-muenchen.de

Clinic for Swine

Chair	Prof. Dr. Mathias Ritzmann
Telephone	+49 (0) 89 / 2180 - 78900
Fax	+49 (0) 89 / 2180 - 78902
E-Mail	ritzmann@med.vetmed.uni-muenchen.de

Clinic for Birds, Small Mammals, Reptiles and Ornamental Fish

Chair	Prof. Dr. Rüdiger Korbel
Telephone	+49 (0) 89 / 2180 - 76070
Fax	+49 (0) 89 / 2180 - 76082
E-Mail	korbel@vogelklinik.vetmed.uni-muenchen.de

Institute of Veterinary Pathology

Interim Chair	Prof. Dr. Andreas F. Parzefall
Telephone	+49 (0) 89 / 2180 - 2530
Fax	+49 (0) 89 / 2180 - 2544
E-Mail	andreas.parzefall@lmu.de



Livestock Centre Oberschleißheim

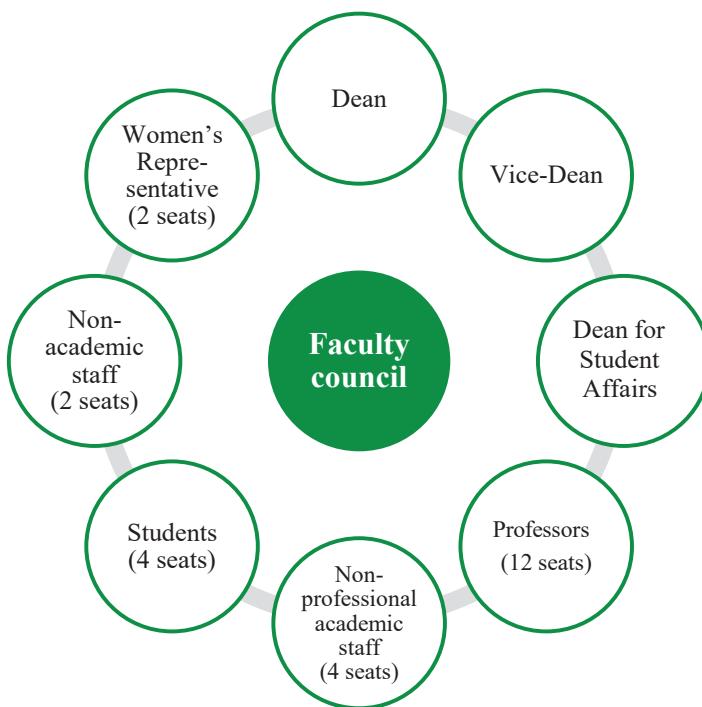
Livestock Centre Oberschleißheim	
Executive Director	Prof. Dr. Dr. h. c. Erwin P. Märtlbauer
Centre Manager	Prof. Dr. Armin Scholz
Telephone	+49 (0) 89 / 2180 - 76040
Fax	+49 (0) 89 / 2180 - 76041
E-Mail	armin.scholz@lvg.vetmed.uni-muenchen.de

After the Department of Veterinary Sciences and the Centre for Clinical Veterinary Medicine had been established, an Executive Board of the Livestock Centre Oberschleißheim was formed, comprised of two professors from each of the administrative bodies and the Dean.

1.2.5 Councils, Boards and Committees

Faculty Council

The Faculty Council is the autonomous governing body of the Faculty. It consists of 31 members and is responsible for decisions concerning all important issues of the Faculty. According to Article 34 of Bavarian Higher Education Act (*Bayerisches Hochschulgesetz*), the Faculty Council consists of the Dean, Vice-Dean, Dean of Student Affairs, heads of the Institutes of Pathology and Parasitology, and of the Small Animal Clinics, Clinic for Swine, Clinic for Horses, Clinic for Birds, Small Mammals, Reptiles and Ornamental Fish, Clinic for Ruminants with Ambulatory and Herd Health Services and representatives of Bacteriology and Mycology / Virology. Elected members of the Faculty Council are representing their respective professional groups. They are to be elected every two years by their peer groups, while re-election is possible.



Women's Representatives

The tasks of the Women's Representatives are defined in Article 4 of the Bavarian Higher Education Act (*Bayerisches Hochschulgesetz*): "The Women's Representatives take care to avert disadvantages for female academics, female teachers and students; they support the university in fulfilling its task of actually enforcing equality between women and men." The Women's Representative of the entire LMU is supported by the Women's Representatives of the individual faculties. The Women's Representative of the Veterinary Faculty is elected for two years among the female full-time academic staff by the Faculty Council. All female professors, academic staff and students of the Faculty entitled to vote may propose candidates. The Women's Representative ensures that no actions or decisions to the detriment of female scientists, teaching staff and students occur. Prof. Dr. Ellen Kienzle has been in office since 2017. Associate representatives have been elected to support the Women's Representative:



- apl. Prof. Dr. Monika Rinder
- PD Dr. Dorothea Döring
- Prof. Dr. Claudia Guldimann
- Prof. Dr. Gabriela Knubben-Schweizer
- PD Dr. Veronika Goebel
- Dr. Susanne Zöls

Specific tasks of the women's representative of the Establishment are:

- participation in appointment procedures and all search committees recruiting faculty to ensure recruitment of suitable female candidates;
- voting rights in faculty committees;
- promotion of young academics;
- advice on funding and scholarships for junior researchers;
- mentoring programme;
- advice for female academics and students in crisis situations.

Ethics Committee

The Ethics Committee (EC) of the Faculty of Veterinary Medicine, LMU Munich currently consists of 10 members. This committee includes the Animal Welfare Officer of the Faculty and two external veterinarians, currently working for other governmental institutions. The EC Chair evaluates study proposals and organizes annual meetings, sends out each proposal, compiles reviewer comments and questions and formulates a response to the applicants (unconditional approval, rejection or request for further specification of details or concerns requiring protocol amendments). By-laws and all relevant forms needed for EC applications are posted on the Faculty's website.

Ethics Committee of the Faculty of Veterinary Medicine, LMU Munich	
Chair	Prof. Dr. Ralf Mueller
Animal Welfare Officer	Dr. Caroline Woehr
Additional Members	Prof. Dr. Andrea Meyer-Lindenberg
	Dr. Linda Böswald
	Dr. Michaela Knoll-Sauer
	Dr. Monika Rinder
	Dr. Karin Weber
	Dr. Christoph Wenzel
	Dr. Gabriele Zehrer
	Dr. Susanne Zöls

Mentoring Commission

The "08LMU Mentoring Commission" coordinates the activities of the 08LMU mentoring programme and decides on admission of new mentees. Members of the mentoring commission are the Dean, the Women's Representative and at least three additional members elected by the Faculty. The proportion of women in the commission is to correspond with the proportion of female students at the Faculty.



Curriculum Committee

The Curriculum Committee of the Faculty of Veterinary Medicine consists of the Vice-Dean for Student Affairs, Prof. Dr. Thomas Göbel, and representatives from the Department of Veterinary Science, the Centre for Clinical Veterinary Medicine and the student body (see 3.4.)

Master Animal Health Management

Cooperation with the University of Applied Sciences Weihenstephan Triesdorf to gain a Master of Science degree in Animal Health Management. A four-semester master study (60 ECTS) enables veterinarians to gain very specific knowledge in animal health management, particularly for cattle, swine and poultry.

1.3 Strategic and operating plan of the Establishment

1.3.1 Strategic plan

The most recent SWOT analysis is found below:





1.3.2 Operating plan

As the Faculty we need to adhere to and implement the legal requirements provided by the TAppV. At the same time, we aim to fulfil our mission statement and advance excellence in teaching, research and service.

Operating plan for teaching

The Faculty of Veterinary Medicine established a Curriculum Committee with the task of improving all educational aspects as much as the strict legal constraints provided by TAppV will allow. This Curriculum Committee has increased the awareness of the relevance of teaching in our research environment. A recent innovation allows us to hire clinic staff with income from clinical services for service tasks, enabling our clinical faculty members to dedicate more time to hone all aspects of their teaching skills. Furthermore, the Faculty spends two days every year in a retreat focusing on new teaching skills and an exchange of knowledge and experience with the goal to improve all aspects of teaching. The Centre for Clinical Veterinary Medicine has assigned two additional days on an annual basis as continuing education for all staff of the entire Faculty focusing on improving skills necessary for teaching and research.

Operating plan for administration, campus construction and service

The Clinic for Equine Medicine and the Clinic for Equine Surgery have been merged in 2021 and now function as one unit in the brand new state-of-the-art equine clinic in Oberschleißheim. Similarly, the Small Animal Medicine Clinic and the Small Animal Surgery and Reproduction Clinic will be merged on April 1st, 2023. A visionary concept has been developed and already introduced to the Central University Administration. This will optimise the use of resources, student teaching and clinical service to the community and will secure our prime position amongst veterinary referral clinics within the Munich metro area and entire Bavaria. In the next step, planning and construction of a new Small Animal Clinic on the new campus in Oberschleißheim will follow. Overall, almost all institutes and clinics will have moved to Oberschleißheim by 2027, facilitating commute for students, staff and faculty.

Although the Faculty has limited influence on salaries and the number of permanent positions, the Dean's Office addresses those issues regularly in discussions with relevant governmental bodies and has already raised the awareness for those problems. We expect that this increased awareness will incrementally help to improve the situation.

Our Faculty is aware that excellent leadership qualities are indispensable for chairs and directors of institutes and clinics to create an atmosphere conducive to successful research, teaching and service and to recruit and retain young talents and top performers in the field. Therefore, since 2021, the Centre for Leadership and People Management assists the Faculty throughout the recruitment process to identify the most suitable candidates for leadership positions.

Operating plan for research

In accordance with recent national and international initiatives, the Faculty of Veterinary Medicine intends to strengthen four major research areas of One Health: translational medicine, reproductive medicine, biology and biotechnology, infection, immunity and inflammation and veterinary integrative medicine. This focus is reflected throughout the recruitment of new faculty, but also by an interactive approach fostering intensive multidisciplinary collaboration between individual institutes and the formation of research clusters including members of the Department for Veterinary Sciences and clinical specialists in veterinary and human medicine as well as independent research facilities in the Munich area. New research facilities like the CiMM (Centre for Innovative Medical Models) established in Oberschleißheim in 2020 support these endeavours and provide a unique platform to create, investigate and characterise large animal models (www.cimm.gen.vetmed.uni-muenchen.de/index.html).



Further research facilities are currently planned and constructed on the campus in Oberschleißheim, further optimizing research opportunities, resources and interaction.

1.4 Establishment's policy

1.4.1 Description of the global policy and strategy of the Establishment for outcome assessment and Quality Assurance (QA)

Article 10 Section 2 of the Bavarian Higher Education Act (BayHSchG) represents the legal basis for QA at Bavarian universities and obliges universities to develop such a system. The Faculty has embraced QA as a core topic and began to focus on continuing quality enhancement to provide teaching, research, services and administration of the highest standard.

To ensure continuing enhancement of quality, the Faculty schedules regular meetings with staff involved in QA (see Standard 1.6.). Any planned measures that emerge from the QA meetings are communicated via a shared portal (Confluence) and can be accessed by all staff involved in QA. Furthermore, staff of our Faculty has access to a shared drive (*Fakultätsspinnwand*) that provides information about core processes of the dean's office, the office of student affairs and all chairs of the Faculty. This ensures transparency throughout the Faculty and across different chairs and clinics.

To standardise processes and ensure sustainability, standard operating procedures (SOPs) and other written forms are used routinely throughout the Faculty. These forms are available to staff and students electronically. To guarantee cyclical process performance, implemented processes, SOPs and forms are currently being labelled with revision periods and the individuals responsible for those documents.

Collecting feedback and information from different parties is crucial for our Faculty to detect potential for improvement. We use different approaches to obtain information and feedback. Any information received is used to implement targeted improvement strategies for teaching, research, and services. For effective management of teaching, students can get in touch with academic staff of the Faculty directly in several ways: teaching staff can be reached during their weekly consultation hour or alternatively specific appointments are made with staff members via e-mail. Additionally, students and staff can anonymously contact any academic and non-academic staff directly via a letter box installed at the Dean's Office. This feature is currently being digitalised to be available via the Vet Med LMU mobile app and the website of the Faculty. Beside those direct feedback mechanisms, the Faculty gathers large scale feedback by performing mandatory evaluations of teaching staff and programs at least once per term. Representatives of students also attend regular meetings of the Faculty Council during which they can raise important topics and contribute to decisions of the Faculty. For effective management of research, the different parties involved (doctoral students, habilitation students, residents, professors) are granted academic independence in an environment highly conducive to research. Biannual internal retreats for doctoral candidates guarantee feedback on research activities by a number and variety of people. The Faculty also supports any staff involved in research in attending national and international congresses for scientific development and exchange. Any services offered (clinical, diagnostic, continuing education) are based on the latest scientific knowledge.

Proposals made by the QA committee are spread via different channels to inform staff, students, and stakeholders. The Faculty Council, the leadership of the Centre for Clinical Veterinary Medicine and the Department for Veterinary Sciences each meet eight times per year to address important topics that impact the departments and Faculty. During these meetings, any changes in QA processes are communicated and discussed. Decisions about QA are finalised by the leadership of the Department of Veterinary Science and the Centre for Clinical Veterinary



Medicine and shared with their respective staff and (if relevant) students and stakeholders. Depending on the topic, mailing lists are also used by the Dean's Office to directly reach specific groups of people. In the future, the QA committee plans to distribute protocols of the QA meetings via the Faculty's moodle platform to ensure that everyone has access to any news, information and decisions in QA processes.

Staff, students, and stakeholders are involved in the QA processes by different approaches. To detect potential for improvement, students and staff are encouraged to give feedback during consultation hours, specific appointments with faculty members or via an anonymous feedback tool (see above). Gathering feedback is seen as the basis for good QA by the Faculty. Any feedback is considered for discussion during the meetings of the QA committee.

Being compliant with the ESG standards (Environmental, Social, Governance) is considered for any decisions made towards the QA in the Faculty. All legal regulations, i. e. the Bavarian Higher Education Act (BayHSchG) and the TAppV are considered as well as the ESG standards.

1.5 Interaction with stakeholders and wider society

Stakeholders request a student profile reflecting the actual future needs for the profession. The employment destinations of past students in Germany can be found on the website of the German Federal Chamber of Veterinarians (*Bundestierärztekammer*): www.bundestieraerztekammer.de/btk/statistik. It provides many details not only regarding employment fields of veterinarians, but also on the number of clinics and private practices, demographic data and the number of veterinarians specialised in specific fields.

Due to strict privacy policies, we have very limited access to sensitive student data. In 2021, we had 196 male and 1242 female students, with an average age of 25.7 years. Most of the students were from Germany (91.4%), 43 from Austria (3%), 14 from France (1%), seven from Italy, the residual students came from 29 other countries worldwide (see **Appendix**).

A short description of the EAEVE, as well as the ESEVT Establishment's status and the last ESEVT SER and Visitation Report is available on the Faculty website: www.vetmed.uni-muenchen.de/fakultaet/eaeve/index.html including also a link to the EAEVE webpage.

1.6 QA strategy

To ensure that all interest groups of the Faculty (students, staff, stakeholders) are involved in the QA processes, QA is managed centrally as well as decentralized. The focus is always on continuously improving the quality of teaching, research, services, and administration. The central management is carried out by QM representatives (i. e. "quality manager") and deputies of the Dean's Office, the Office of Student Affairs as well as of the Centre for Clinical Veterinary Medicine and the Department for Veterinary Sciences.

To be available for institutional insights and give input from the individual facility's view point, one faculty member was appointed by each institute and clinic. The quality managers and deputies and the appointed faculty members from the individual facilities form the QA committee, which meets once per term. During these meetings, goals for improvements in teaching, research, service, and administration are proposed by the central QM team and discussed in the committee, following the development of strategies for continuous quality improvement. Any processes resulting from QA committee meetings are then discussed in the councils of the two departments, implemented according to the Plan-Do-Check-Adjust principle and reviewed periodically, depending on the process. The involved members of the clinics and institutes communicate any topics regarding QM to the staff of those facilities. The Dean of Student Affairs communicates relevant QM topics to students. In addition, a central



event is held once per term for students and staff of the Faculty to inform them about innovations in QM. In the future, the QA committee plans to send a QM newsletter to the entire Faculty once per semester to transparently inform about innovations in QM.

1.7 Correction of the deficiencies since the last ESEVT Visitation

1.7.1 Relocation to the new Campus Oberschleißheim

The last ESEVT Visitation took place from October 22 to 26, 2012. Since then, significant progress has been achieved in building of a unified campus in Oberschleißheim (OSH). Many issues mentioned in the last EAEVE review have been addressed or are being addressed currently.

The move of all pre- and paraclinical institutes of the Veterinary Faculty to the new Campus OSH has become a top priority to the LMU leadership. Since the last visit, a large lecture hall (300 seats) combined with a small cafeteria was built. A new Equine Clinic and a new Clinic for Birds, Small Mammals, Reptiles, Amphibians and Ornamental Fishes were completed and offer state-of-the-art clinical care, student courses, residency programmes and CPD courses for postgraduate students and practitioners. Previous separate Clinics for Equine Surgery, Equine Internal Medicine and Equine Reproduction now form one Equine Clinic under one management within the same building. Moreover, the Clinic for Ruminants has added a small ruminant teaching facility. Currently, the new Institute of Infectious Diseases and Zoonoses is being built on its new premises in OSH.

With the exception of the Small Animal Clinic and a building for Molecular Animal Breeding and Biotechnology, Palaeoanatomy, the Unit for Experimental Parasitology, and the Unit for Aquatic Industry, Fish Diseases and Biology, all other Institutes and Clinics are either already working in OSH, being constructed or are in the advanced planning phase. Additionally, construction of further lecture halls, a large campus cafeteria, library and a central administration building is scheduled for 2024. Starting 2026, more than 75% of the teaching will be conducted in OSH.

Effective with retirement of the current head of small animal surgery on April 1, 2023, all small animal disciplines will be consolidated within a unified Small Animal Teaching Hospital. A visionary concept of this clinic and its future structure has already been developed, approved by the Dean's Office and presented to the central administration after the unification of the two clinics was approved by the leadership of the Centre for Clinical Veterinary Medicine.

1.7.2 Quality assurance

Since the last visitation, many steps towards a quality assurance system have been made (see 1.6.). The evaluation process has been extended. Supported by Article 30 of the Bavarian Higher Education Act, the LMU performs evaluations of all lectures and seminars on both a regular and random basis. All compulsory courses are evaluated up to six times per term. Additional evaluations are mandatory for lectures held by habilitation/PhD candidates. Evaluation of extramural training (EPT) sites by students' questionnaires is now obligatory to control the efficacy and quality of teaching by non-academic extramural tutors. Further evaluation of training sites by an academic peer council is in progress. A person overseeing the quality assurance management in the Centre for Clinical Veterinary Medicine has been appointed and first meetings with representatives of each clinic and institute have been conducted to identify the state of quality assurance management in each institution and the next steps for improvement.



1.7.3 Curriculum

1.7.3.1 Advanced interdisciplinary courses and research opportunities of undergraduate students

Elective courses and modular lectures were added to the curriculum, successful completion of which is awarded by supplementary certificates. One example is “Basics of neurological disorders”, an interdisciplinary series extending from 2nd to 6th semester. Moreover, students of the clinical semesters (8th/9th semester) can elect a science block hosted by paraclinical institutions to gain insights into bench work through microprojects as an alternative to the classical clinical rotations. Undergraduate students also have the opportunity to propose or choose an elective extracurricular research project. Those projects were funded by the LMU (VetResearch initiative) until 2021. Due to funding cuts this program was discontinued by the LMU, currently the Faculty is in search of new funding.

1.7.3.2 Practice management

Another elective subject consists of practice management talks (by experienced clinicians and practitioners from all disciplines) where the students get deep insights into the organisation and economical aspects of a veterinary practice. Furthermore, the Entrepreneurship Center is offering lectures and seminars for business planning, innovations, PR and marketing.

1.7.3.3 Skills lab

A Skills Lab has been established by the Faculty. Students of 4th to the 11th semester can improve their practical skills in different subjects in eighteen exercise stations.

1.7.3.4 Transparency of credits

The ECTS has been adopted.

1.7.4 Postgraduate education

Most residency programs of the various European and American Specialty Colleges are now accepted and guarantee eligibility for specialist certifying exams by the Bavarian Veterinary Chamber.

1.8. Suggestions for improvement on Standard 1

The Faculty will attempt to overcome the weaknesses and threats identified by the SWOT analysis. Unfortunately, the legal boundaries will not change easily and quickly. However, other weaknesses can be addressed. For example, the establishment of a unified campus will eliminate the need to commute between locations. First discussions have already taken place to convince authorities to build a train stop dedicated to the new campus. The male-to-female ratio of professors in leading positions will be addressed as legally we are obliged to hire female candidates over male ones of similar suitability. A position for quality management has been created. And finally, a focus of the Curriculum Committee in the next years is the vertical and horizontal integration of disciplines within the curriculum.



2. Finances

2.1 Factual information

Funding of a large part of the Faculty is provided to the University by the Bavarian State Ministry of Sciences and Arts, the amount is specified by the State Budget. Funding of the clinics is dealt with by a separate chapter of the State Budget. There is no single budget for the entire Faculty. The State of Bavaria and the University provide financial support separately for the Department of Veterinary Sciences, Centre for Clinical Veterinary Medicine, the Livestock Centre Oberschleißheim, and the Dean's Office. The system of allocating funds to the Faculty's institutions is complex. First, salaries of all fixed positions are paid by the university. In addition, the building maintenance and classic maintenance tasks such as cleaning, repairs etc. as well as the mail office are paid by the university. In the case of the Department of Veterinary Sciences, a basic budget is provided for each institute which is independent of potential revenues and serves as funding to pay for equipment and consumables used in research. In addition, each institute is able to keep 95% of the income created by diagnostic and other services. The Dean's Office, which is additionally responsible for the Faculty's IT-Group, also receives a lump sum per year. In contrast, finances of the Centre for Clinical Veterinary Medicine and the Livestock Centre Oberschleißheim are more complicated, as in addition to the above specified funding there are three more sources. First there is an annual lump sum for research equipment over € 5000, that can be applied for by each faculty member of the Centre for Clinical Veterinary Medicine. With several applications, the leadership council of the Centre for Clinical Veterinary Medicine distributes the funds depending on the perceived benefit of the equipment applied for. Second, the clinics have to generate revenues by clinical service or production of agricultural goods which in turn can be used to cover expenditures. Details are given in the corresponding sections below.

As of the winter semester 2013/14, no tuition fees are charged in the State of Bavaria. The Bavarian State Parliament (*Bayerischer Landtag*) decided in March 2013 to abolish tuition fees in general. In return the missing funds are now financed through the annual household budget of the Bavarian State, called "study grants". Pursuant to Art. 5a (1) BayHSchG, study grants are provided to LMU to improve study conditions. They serve to compensate for the eliminated tuition fees. This amount totals 189 million euros annually for Bavarian universities. According to Art. 5a (1) BayHSchG, study grants and additional compensation funds are to be used for the intended purpose only. The amount of funding per faculty is based on the student numbers. State tuition grants must be used exclusively to improve teaching and student conditions and without increasing enrolment capacity. Categories of use are improvement of teaching, improvement of student services, and improvement of infrastructure. Funds may be used to make temporary or permanent commitments. Permanent commitments should normally be made by permanent staff.

Decisions on the use of study grants are prepared in commissions. At the LMU, the composition of the study grant commission is regulated in the Statutes on Student Participation in Decisions on the Use of Study Grants at LMU Munich dated September 24, 2013. For the use of the study grants for central measures (e.g. central university library, central student advisory service, central teaching and service facilities, technical lecture hall equipment, structural measures), a central commission is appointed by the Senate.

Table: Allocation of funds from study grants (in Euros)

2021	2020	2019
822,506	837,563	809,623

Selected funded projects:

- Clinical Skills Lab;
- virtual anatomic collection;
- inverted classroom studio;
- creation of educational videos and eLearning resources;
- new microscopes for the courses in bacteriology;
- improvement of the supervision in anatomy and buiatrics;
- Students' Office;
- eLearning Resources (eLearning programmes, eBooks etc.).

Table 2.1.1 Annual expenditures during the last three academic years (in Euros)

Area of expenditure	2021	2020	2019	Mean
Personnel	40,174,014	39,919,045	38,927,166	39,673,408
Operating costs	10,010,014	12,908,929	8,888,490	10,602,478
Equipment	3,614,721	1,461,910	1,268,176	2,114,936
Total expenditure	53,798,748	54,289,884	49,083,832	52,390,821

Table 2.1.2 Annual revenues during the last 3 academic years (in Euros)

Revenues source	2021	2020	2019	Mean
Public authorities	34,566,384	35,466,365	33,025,921	34,352,890
Clinical services	6,631,787	5,364,512	5,030,484	5,675,594
Diagnostic services	677,359	677,430	714,113	689,634
Other services	1,758,096	1,805,925	2,165,784	1,909,935
Research grants	5,662,831	11,302,263	8,218,736	8,394,610
Continuing Education	84,354	65,929	63,348	71,211
Donations	91,190	160,206	41,323	97,573
Other sources **	-	-	-	-
Total revenues	49,472,001	54,842,629	49,259,709	51,191,446

Table 2.1.3 Annual balance between expenditures and revenues (in Euros)

	2021	2020	2019	Mean
Total expenditures	53,798,748	54,289,884	49,083,832	52,390,821
Total revenues	49,472,001	54,842,629	49,259,709	51,191,446
Balance	-4,326,747	552,745	175,877	-1,199,375

Utilities (e.g. water, electricity, gas, fuel) and other expenditures directly paid by the official authority are included in the tables above, it is not possible to separate these costs.



FINANCES

2.2 Financial management

2.2.1 Financial management of the clinical and field services

Financial resources are allocated to the Centre for Clinical Veterinary Medicine by the central administration of the LMU, with specification of revenues and expenditures for each calendar year. All incoming and outgoing invoices are considered for tax purposes. The outgoing invoices (revenues) are charged with 19% value added tax (VAT). For incoming invoices (expenditures) the value added tax (input tax) is paid back, however, not in the full amount of 19%, but depending on the amount of service on the invoice. The more service a clinic can prove, the more they get back in value added tax. For invoices for teaching and research value added tax is not refunded. Thus, the refund percentage of the value added tax is between 21.66% and 96.03%.

2.2.2 Degree of autonomy of the Establishment on the financial process

For the Department of Veterinary Science, each Institute decides independently on the use of the allocated annual funds, however, the allocated total amount is not controlled by the individual institutes but by the Central University Administration. Service revenues remain in the respective institutes. They are used autonomously, primarily to finance personnel, material and equipment.

The budget for the current year is allocated to the Centre for Clinical Veterinary Medicine. The members of the Centre Council decide on the distribution to the individual clinics within the centre. Some clinics have a high turnover (e. g. small animal clinic) while some clinics have a lower turnover (e. g. porcine clinic). Needed staff for on-call duty and planned projects for the current year also varies between clinic, financing those needs is also considered. The annual profit can also be carried over to the following year.

2.3 Resources allocation

A completely new campus is currently being built in Oberschleißheim. The new faculty buildings and clinics will be equipped to the highest standards providing state-of-the-art teaching, research and service environment. Financing is being provided by the State of Bavaria.

At the Centre for Clinical Veterinary Medicine, funds are made available in the so-called Title Group 76 for major investments (over 5,000 €). A committee decides on the distribution of those funds. In addition, the Centre for Clinical Veterinary Medicine saves funds for other high-cost investments and to support new professors. Furthermore, members of the Centre Council can apply twice yearly for funds from Title Group 76 to finance additional equipment for research. The Centre Council then decides which requests will be approved.

Every lecturer from the Department of Veterinary Science and the Centre for Clinical Veterinary Medicine, as well as members of the Student Council, employees of the Dean's Office, the Office for Student Affairs and the IT department of the Faculty can submit an application for the allocation of study grants. All funds are to be used to improve or redesign teaching. Innovative teaching concepts as well as cooperative projects between different institutes/clinics will be funded preferentially. Funds from study grants should provide a financial boost for new ideas and concepts, but will not guarantee permanent funding. Applications should also address the sustainability of the projects, as well as the establishment of independent funding. Applications for consumables or basic equipment will not be considered. A commission decides on the awarding of study grants. This commission must consist of at least half students, and consists furthermore currently of the Establishment's Dean,



the Dean of Student Affairs, two professors, two members of academic staff and one of the Women's Representatives.

Accountability reports for awarded non-personnel funds and activity reports for awarded positions must be submitted to the Study Grants Committee for review.

The following projects will be given priority for funding through study grants:

- comprehensive expansion and further development of the Skills Lab;
- cooperation with other faculties;
- establishment of a didactics competence centre;
- expansion of the range of elective courses;
- expansion of "good practice" (e.g., One Health, live-long learning, ethics);
- strengthening independent and self-directed learning;
- improvement of small group tutoring.

2.4. Comments on Standard 2

As the Bavarian State is the ultimate funding body of the Faculty of Veterinary Medicine, there is only limited autonomy regarding the funding of the Faculty, there are many areas where it is not possible for the Faculty to change the current situation, in contrast to other more autonomous institutions.

2.5. Suggestions for improvement on Standard 2

With the merger of the small animal medicine and surgery clinics, there is a great opportunity to significantly increase the efficiency, patient load and consequently the income of this clinic, which will provide more options regarding clinic-funded personal. In addition, faculty-wide research meetings will hopefully increase collaboration efforts and successful acquisition of research funding, further allowing to improve the financial situation.



3. Curriculum

3.1 Factual information

3.1.1 Aims and strategy concerning the curriculum

In Germany, the educational aims are regulated by the Licensure Act for Veterinarians (*Tierärztliche Approbationsverordnung*, TAppV; see **Appendix**).

The TAppV defines the goals, requirements and structure of the veterinary education and the teaching content and additionally regulates examinations and practical trainings.

The aims of our curriculum are:

- to use of competence-based learning strategies;
- to achieve defined, evaluated and applied learning outcomes in all fields of veterinary education, teaching, learning, examining; all learning outcomes are collected in specific learning outcome catalogues with dedicated competence level;
- to teach and train real-life situations through case demonstrations, problem-orientated work-up, intensive skills lab training and related examination approaches during the entire programme;
- to achieve cross-sectional and interdisciplinary teaching and learning: non-clinical and clinical educational contents from different disciplines are cross-linked, combined, coordinated and build on each other;
- to set an additional focus on multiple transferable skills such as self-centred learning, a problem-solving approach, self-reflection as well as "soft skills" such as social, personal and methodical competencies;
- to provide a combination of scientific and practical training to graduate responsible, critical, independent and ethical veterinarians.

3.1.2 Legal constraints on the curriculum

The curriculum is described in the TAppV in detail with respect to the education goal, types of teaching, subjects to be taught, hours per subject, extent of elective training, as well as basic chronology of exams, respective subjects and the knowledge and skills to be examined. The regulations are further detailed in the Rules for Study and Examination (*Prüfungs- und Studienordnung*; amended in 2017). The Rules for Study and Examination were developed by the Faculty Committee of Study Affairs. They were discussed, approved and then forwarded to the Board of University Representatives which gave the final stamp of approval.

According to the TAppV, the number of hours of each subject can be decreased by up to 20%, if the subject is listed in the TAppV **Appendix** with more than 28 hours and if the total teaching volume of 3.850 hours remains. Recently, the Faculty Council decided to reduce the number of lectures in zoology and botany in favour of pathophysiology and epidemiology.

3.1.3 Quality assurance

The Faculty has taken many measures in the past to avoid curricular overlaps, redundancies, omissions, and lack of consistency / transversality. The Curriculum Committee aims to continuously improve the curriculum. Members of the committee, i. e. the Dean of Student Affairs, the EAEVE Reporting Team, representatives of the Department of Veterinary Sciences, the Centre for Clinical Veterinary Medicine, and of the student body, meet every month. The Faculty encourages its members to continuously interact, and a faculty-wide teaching retreat has repeatedly been organized in the past prior to COVID19. Since 2021, two days each year are dedicated Centre Teaching Days where lectures relevant to teaching and research are offered to all postgraduate students, assistants and professors of the Faculty, those lectures are recorded and are available on the Faculty's moodle website. The complete curriculum with details on



each course is summarised in the so-called study guide (Studienführer), and is available to all teaching staff, students and stakeholders. In addition, all lecturers can access any lecture material on the Faculty's moodle website and can thus adapt their content and style to complement that of other faculty members. This allows lecturers to build optimally on knowledge that students have acquired in past courses.

Table 3.1.1 Curriculum hours in each academic year taken by each student (in hours per week per semester (Semesterwochenstunden, SWS), 1 SWS=14 hours)

Year	Type of training					Total	
	Theoretical training		Supervised practical training				
	Lectures	Seminars	Laboratory & desk-based work	Nonclinical animal work	Clinical work		
1	48		6			54	
2	18		16	4		38	
3	45	4	4			53	
4	55	2	4			61	
5			6.5	7	42	55.5	
Total	166	6	36.5	11	42	261.5	

In preclinical teaching from the 1st to the 4th semester, students acquire the scientific and basics, which are practically implemented in clinical teaching from the 5th semester onwards. In 2017, clinical teaching was completely restructured and implemented the so-called organ blocks (Organblöcke). While clinical teaching was previously strictly divided by animal species, students now learn the relevant pathophysiology, clinical signs, diagnostic approaches and treatment modalities of all animal species by specific organ systems such as skin, urinary tract, nervous system, gastroenterology, endocrinology, sensory organs, musculoskeletal system, cardiovascular system, respiratory tract, infection/immunology/haematology/oncology, paediatrics, anaesthesia and intensive care, vaccination and health care). This approach prevents unnecessary redundancies.

Table 3.1.2 Curriculum hours taken by each student

Basic Subjects	Type of training		Total
	Theoretical training	Supervised practical training	
	Lectures	Laboratory & desk-based work	
Medical physics	4		4
Chemistry	6	2	8
Animal biology, zoology and cell biology	5		5
Feed plant biology and toxic plants	4		4
Biomedical statistics	2		2
Total	21	2	23



Veterinary Basic Science Subjects	Type of training				Total	
	Theoretical training		Supervised practical training			
	Lectures	Seminars	Laboratory & desk-based work	Non-clinical animal work		
Anatomy, histology & embryology	13		10		23	
Physiology	7		5		12	
Biochemistry	4		5		9	
General and molecular genetics	2				2	
Pharmacology, toxicology, pharmacy and pharmaco-therapy	8		1		9	
Pathology	3	4		7	14	
Parasitology	4		1		5	
Microbiology	8		2		10	
Immunology	1				1	
Epidemiology	1				1	
Animal Ethology	2				2	
Animal Welfare	3	2			5	
Animal Nutrition	3		4		7	
Total	59	6	28	7	100	

Clinical Sciences Subjects	Type of training				Total	
	Theoretical training		Supervised practical training			
	Lectures	Laboratory & desk-based work	Clinical work			
Obstetrics, reproduction & reproductive disorders	6				6	
Diagnostic pathology	7				7	
Medicine	7				7	
Surgery	7				7	
Anaesthesiology	4				4	
Clinical practical training in common animal species			42		42	
Preventive medicine	3				3	
Diagnostic imaging	4				4	
Therapy in common animal species	14				14	
Animal Production, including breeding, husbandry and economics	3	1			4	
Health management	5				5	
Propaedeutics of common animal species	3	3			6	
Total	63	4	42		109	

Some of these numbers are estimated, as a number of lectures are covering several topics (for example case demonstrations and case discussions), although the total number of hours is fixed.

Food Safety and Quality, Veterinary Public Health and One Health Concept Subjects	Type of training			Total
	Theoretical training		Supervised practical training	
	Lectures	Seminars	Laboratory & desk-based work	
Veterinary legislation including official controls and regulatory veterinary services, forensic veterinary medicine and certification	2			2
Control of food, feed and animal by-products	4			4
Zoonoses	2			2
Food hygiene and food microbiology	7	1		8
Food technology	2			2
Total	17	1		18

Table 3.1.3 Practical rotations under academic staff supervision (excluding EPT)

Types	List of practical rotations (Disciplines/Species)	Duration (weeks)	Year of programme
Intra-mural clinics (VTH)	Clinic for Horses	12	5
	Clinic for Small Animal Surgery	12	5
	Clinic for Birds, Small Mammals, Reptiles and Ornamental Fish	12	5
	Clinic for Swine	12	5
	Clinic for Ruminants	12	5
Ambulatory clinic/Herd Health Management	Part intra-mural clinical rotation	12	5
FSQ & VPH	Course in meat hygiene Course in food hygiene	7 7	5 5
Others (Pharmacology)	Course in drug dispensation and prescription	7	5

**Table 3.1.4 Curriculum hours taken as electives for each student**

Electives	Type of training						Total	
	Theoretical training	Lectures	Seminars	Self-directed training	Supervised practical training	Non-clinical animal work		
Basic subjects	3						3	
Basic Sciences	60	13			15	1	89	
Clinical Sciences	52	7	1			5	12	77
Animal Production	4	2					2	8
FSQ, Public Health	7	1						8
Total	126	23	1	15	6	14	185	

Due to the corona pandemic and its consequences for education and teaching, almost all elective courses had to be online. The table above shows the types of courses that are normally offered.

In addition, 53 voluntary courses were added for interested students and doctoral students. Chemical training, statistics for doctoral students, voluntary preparation, practical supervised sono- and echocardiography, supervised microscopy, modern methods of molecular biology, current chapters of biochemistry, exercises on modern methods of molecular biology, modern methods of molecular cell biology, exercises on modern methods of molecular cell biology, glycobiochemical seminar, modern analyses in biochemistry, virtual training in animal nutrition, animal models in biomedical research, principles of functional genome analysis, practical training in molecular and cell biology, experimental embryology, introduction to phylogenetics, current achievements of vaccine research, mechanisms of virus-host interaction, new findings from virus diagnostics and vaccine application, findings of bacteriological and mycological diagnostics, current results of bacteriological research, instructions for animal experiments, behavioral therapy/case studies and home visits, ethology and animal welfare, practical assessment of farm animals housing and management, excursions to farms (husbandry systems), blowpipe techniques, epidemiology and ecology of horse parasites, parasitoses of dogs and cats: diagnosis, therapy and prophylaxis, work in the diagnostics laboratory, laboratory internship in molecular parasitology, parasitological seminars, literature seminar pharmacology, selected topics in pharmacology, applied pharmacology and toxicology, pharmacology in the laboratory for beginners, journal club on fish diseases, practical training in the neuropathological laboratory, excursion to inventory diagnostics, exercises for histopathological examinations in avian medicine, journal club on birds/reptiles, introduction to abdominal sonography as a basis for the permanent use of the student sonography laboratory, course mentoring for questions about studies and exams, reproductive technology internship, demonstration of current autopsy material, archaeozoological exercises, basics of using high-throughput sequencing, basics of molecular parasitology, work in the laboratory for advanced students, introduction to archaeozoological data processing, exercises in veterinary terminology.



3.1.4 Clinical training prior to clinical rotation

During the 3rd semester students attend an animal breeding course.

The course in clinical propaedeutics is scheduled in the 4th semester. Students are rotating weekly between the different units, each time focusing on a different species and/or discipline. The course is completed with an objective structured clinical examination (OSCE) before the 6th semester, in which the students' various clinical examination techniques are evaluated. The OSCE consists of 6-8 different examination stations for one day. Each round consists of four simultaneous courses that are exactly the same. That way each student gets exactly the same exam tasks. As this OSCE is extremely labour-intensive it is only held once per year. The majority of lectures in clinical subjects is scheduled from the 5th to the 8th semester. In addition, students attend laboratory bench work in parasitology, microbiology, animal nutrition, and drug dispensation and prescription.

3.1.5 Clinical and pathological rotation

Each clinical rotation is of 12 weeks duration. Rotations are offered in the Ambulatory Clinic and Herd Health Service, the Small Animal Medicine Clinic, the Clinic of Small Animal Surgery and Reproduction, Clinic for Ruminants, Clinic for Swine, the Equine Clinic and the Clinic for Birds, Small Mammals, Reptiles and Ornamental Fish. Hands-on times vary amongst the clinics from 40-90%. The responsibilities of the students, times, opening days and on-duty services vary from clinic to clinic and are detailed in the **Appendix**. In the clinical year, students gain further practical and theoretical knowledge in pathology during a 7-week block which consists of a total of 42 hours of pathophysiology seminars (60 students with 5 teachers), 28 hours of histopathology (60 students with 2 teachers), 14 hours of macroscopic demonstrations (8 students per teacher and organ), and 12 hours of post-mortem examinations (5 students per teacher and carcass). Seminars are taught as lectures with interactive involvement of the students, including voluntary self-tests and question/answer rounds. During the histopathology seminar, every student is supposed to evaluate 53 different histological sections which are introduced by a short lecture to demonstrate common histopathological and pathobiological features. Thereafter, students are encouraged to approach the slides on their own and describe their findings. In this, they are supported by two additional tutors per class. Additionally, students can study those cases with a virtual microscope on the moodle platform from home. Case demonstrations and post-mortem examinations are interactive hands-on courses. In case demonstrations, students are taught how to recognise pathological patterns, to formulate a morphological diagnosis and to conclude the underlying aetiology. In post-mortem examination courses, the focus is on necropsy technique and to determine the cause of death or the disease. After the necropsy courses, every student is writing a report about a whole necropsy case, and one about a pathologically changed organ. For each report, specific feedback and corrections are provided by the veterinary staff of the institute. The students gain further insights into case-based pathological examinations of pocket pets, reptiles, fishes and birds in the decentral pathology labs of the respective clinics.

3.1.6 Training in Food Safety and Quality (FSQ)

FSQ is taught during clinical rotation in the 9th and 10th semester with a total group size of 60 to 70 students, which are divided into subgroups. During the block of 7 weeks, 4 hours per week are assigned to the course in meat hygiene and 6 hours per week to the course in food hygiene. These courses are designed in a blended learning format, theoretical content is provided online (eBooks, videos, PowerPoints etc. via moodle) for self-study as preparation for the practical courses held at the facilities of the Institute of Food Safety and Analytics in Oberschleißheim. Some topics (e.g. animal welfare during slaughter, HACCP) are taught via zoom meetings/discussions. In addition, homework (e.g. reports on examination and evaluation of



food samples) is submitted by the students via mail and returned after correction by the teaching staff.

Course in meat hygiene

This course formerly took place in the Munich slaughterhouse. Since 2021, it is carried out at the facilities of the Institute of Food Safety and Analytics. Courses on meat inspection and technology are performed in a registered meat cutting and processing facility on the premises of the institute. The carcasses and offal needed for the courses are acquired from approved slaughterhouses. In addition, courses on laboratory tests pertaining to meat hygiene take place in the institute's course room. For practical laboratory courses, the block is divided into two groups of 30 to 35 students. Depending on the topic of the laboratory course, 2 to 3 teachers are present. The practical instruction in post-mortem inspection is carried out in subgroups of 8 to 9 students per teacher. On each of the dates the main emphasis is placed on different aspects of meat inspection (examination of carcasses, pluck set, gastrointestinal tract, identification / classification/health marking, evaluation of proper dressing), while the final date is reserved for an oral and practical exam.

Course in food hygiene

The practical courses are held in the course room and the food production facilities of the institute in Oberschleißheim. During this course, 2 to 3 teachers instruct the students (subgroups of 30 to 35 students) in examination methods (e.g. microbiological, histological and sensory evaluation) as well as technological and hygienic aspects in the production of different food categories (e.g. meat products, fishery products, eggs, honey). In addition, the production of different meat products is demonstrated in the meat processing facilities of the institute (group size 15 to 17 students, 2 teachers per group).

Course in Milk Science

During the 7th semester students spend 2 hours per week in the Institute for Hygiene and Technology of Milk for the examination of milk and milk products (group size 60, 2 teachers per group).

3.1.7 Electives

As stated in the TAppV, at least 84 hours of elective courses must be completed before the Second Preclinical Veterinary Examination. Prior to the Final Examination a minimum of an additional 224 hours of electives have to be completed.

The allocation of electives is organised computer-based via Coremato (**Course Registration and Management Tool**). Coremato has been specifically programmed for the veterinary medicine curriculum and is continuously improved and adapted to changing needs in close cooperation with the developer. Before the beginning of each semester, students have 4 to 6 weeks to enter their wishes. Priorities can be set for each course, and places are allocated accordingly. In case of too many candidates for a specific course, the complex algorithm decides based on previous prioritisation of every single student and negative scores (given when students have registered for an elective course but are not or not successfully participating). Electives are taught either as seminars with variable group sizes or hands-on in small groups depending on the topic of the course. External lecturers also offer courses outside the university in their own research facilities or in cooperation with other study programs. The Faculty offers over 100 different electives during each term. Further details are given in the **Appendix**.

Within the framework of the project lehre@lmu, profile lines ("VETprofil") were established. "VETProfil" has set itself the task of improving the practical orientation within the elective courses. The electives are structured, so that interested students can specialise in a particular species or subject area during their studies.



In addition, the existing range of electives are continuously supplemented and expanded, e.g. to integrate so-called "soft skills" into the curriculum. The wishes and needs of the students, as well as those of the teaching staff, are considered with the expansion of the electives.

3.1.8 Assurance of achievement of education objectives

An important part of the clinical training is the practical training within the EPS, as well as the focus practice at one of the clinics of the Faculty of Veterinary Medicine.

Determined by the TAppV, students complete at least 850 hours of practical training. The goal is for students to gain appropriate clinical and practical experience under supervision as part of their training. For this purpose, the "Logbook for Practical Training" at the Veterinary Faculty creates a documentation aid but also provides the students and their EPT mentors with an overview of the necessary first day skills as recommended by EAEVE. Students are encouraged to focus on basic skills but also acquire advanced skills based on their clinical focus to optimise their learning experience during EPT and focus clinic.

Thus, the logbook provides information to the individual student in which areas further practical knowledge needs to be acquired. Moreover, it provides valuable information for our faculty on the conveyed educational content and potential areas where learning may still need to be intensified throughout the clinical education.

3.2 Promoting student learning

In order to ensure the achievement of the learning objectives and thus the educational goals, and to guarantee fair examinations, the Faculty has defined specific learning outcomes and competencies for each subject. These are in concordance with TappV and have been developed by the respective chairs and teaching staff in collaboration with the Department of Veterinary Science and the Centre for Clinical Veterinary Medicine. Each individual course aims to teach, instruct and ultimately achieve these learning objectives. For optimal exam preparation, these are defined in catalogues and can be viewed at any time and by any student via moodle. The Curriculum Committee closely cooperates and consults with the experts to constantly review and further develop the learning objectives.

The legal basis for an academic environment is provided by the TappV as well as the Study and Examination Rules (*Studienordnung*) of the Faculty. The Faculty offers compulsory courses that comply with the legal regulations. In addition to the compulsory courses, students can further specialise by choosing elective courses (*Wahlpflichtfächer*). Students must complete 22 elective courses (at least 308 hours from 1st to 9th semester) during their studies, which they can choose according to their own personal interest. This helps to gain deeper knowledge in topics of interest. Students can also participate in journal clubs or congresses as part of their elective courses, giving them early insights into scientific literature and research. In addition, a wide range of elective courses is offered that focuses on economic topics, information about job profiles in veterinary medicine and soft skills such as communication strategies.

By offering the so-called profile lines (*Profillinien*), students can already focus on certain areas during their studies. The Faculty offers the following profile lines: anaesthesia, analgesia, emergency and critical care in small animals, applied ethology and behavioural therapy, avian medicine and surgery, avian stock care, principles of neurological diseases, small mammals, small animal internal medicine, equine medicine and surgery, reptiles and fish, laboratory animals, and ruminants. Students receive a certificate of successful completion of a profile line upon graduation. Students also had the opportunity to participate in student research projects (VetResearch) during the semester or as part of an internship. This allows them to gain insights into scientific research. In the past, many VetResearch projects resulted in doctoral theses. Due



to funding cuts this program was discontinued by the LMU, currently the Faculty is in search of new funding.

Self-learning plays a major role at the Faculty and is promoted from the first semester. In the Study and Examination Rules of the LMU Munich (*Studienordnung*), it is legally regulated according to §6, paragraph (4) sentence 5 that among other things the education of the students must be carried out by guided self-learning with specified teaching materials. In the study guide it is also specifically stated that any course should be supplemented by self-learning. The strategy of the Faculty is to create awareness of self-learning and additionally provide easy access to knowledge through a wide range of teaching materials. Tutors are available to help students to become familiar with self-learning. In addition, there is an elective course in which students are taught techniques for learning.

Lecture materials for the compulsory lectures are uploaded to the Faculty's moodle website ahead of a course so that students have the opportunity to prepare in advance and review newly attained knowledge after the lecture. In addition to the traditional teaching materials, students can use a variety of other offline and online media to further their education.

The faculty library provides access to common veterinary literature. Additionally, each institution also has a subject-specific library with relevant literature. The faculty library is complemented by a comprehensive online offer through which students can access a wide range of journals, databases (e.g. Google Scholar, Pubmed), and eBooks free of charge by using the LMU license. The student body also provides exam-relevant summaries of individual courses. Thus, students can acquire compact knowledge for exams in addition to in-depth literature research. With the help of elective courses (see above) students have the opportunity to focus on their areas of interest. Individual elective courses, such as e-learning and scientific work, are aimed directly at encouraging self-learning.

The Faculty provides a wide range of opportunities for specialisation by offering internships, doctoral theses, PhD programs, residencies, federal specialisation programs (*Fachtierarzt*), habilitations and externships.

3.3 Programme learning outcomes

Individual learning outcomes are determined by the various faculty units in accordance with the TAppV and the Day-One Competencies. The Curriculum Committee oversees the general effort and points out incongruence, doubling up and possible missing content. Different aspects of relevant topics are discussed concurrently by different lecturers in the profile lines, where topics are covered over a longer time period by different lecturers from different angles. Similarly, in cross-sectional lectures clinical cases are evaluated by different lecturers from different faculty units (for example a clinician, a pharmacologist and a physiologist for a dog with chronic kidney disease). Day-One Competencies are available for faculty and staff as well as students on the moodle website and the relevant competencies are listed at the beginning of each lecture.

In the various institutions, the most important diseases, topics and procedures of individual fields/subspecialties were discussed by the faculty, then a catalogue about the teaching goals was formulated, where the different depths of knowledge were given for the different diseases and procedures (4 = student has performed the procedure several times or knows the disease in detail including pathogenesis, clinical signs, diagnostic tests and treatment options as well as prognosis; 3 = the student has performed the procedure once or knows the basics and important details about this disease, 2 = the student has seen the procedure performed by somebody else or knows the basics of the disease and knows where to get more information about the disease; 1 = the student has heard about the procedure or disease). In other pre- or paraclinical subjects the catalogues also describe different competency levels, although the definitions and number



of levels vary from subject to subject. Those catalogues are available for all students and regularly revised to adjusted based on possible changes in knowledge, epidemiology and legal requirements. In addition, they are advertised to students at the beginning of the clinical education as well as before the examinations.

A clinical logbook was developed that comprises all the clinical skills which are required by TAppV and need to be acquired by veterinary students. This logbook is structured in a general part (including general basic skills regardless of species) and several species-dependent parts in which skills are classified in core and advanced skills. Core skills are defined as skills which should be performed in all clinics and practices regardless of species or size. Advanced skills on the other hand are often practiced only in specialised clinics or practices. For core skills the logbook also lists a recommended frequency so students get an idea how often certain skills should be performed or at least attended. The logbook is designed for use in clinical rotations and also during EPT. It not only lists the required veterinary skills, but also encourages students to specifically request to be taught skills which they are lacking or did not yet practice sufficiently.

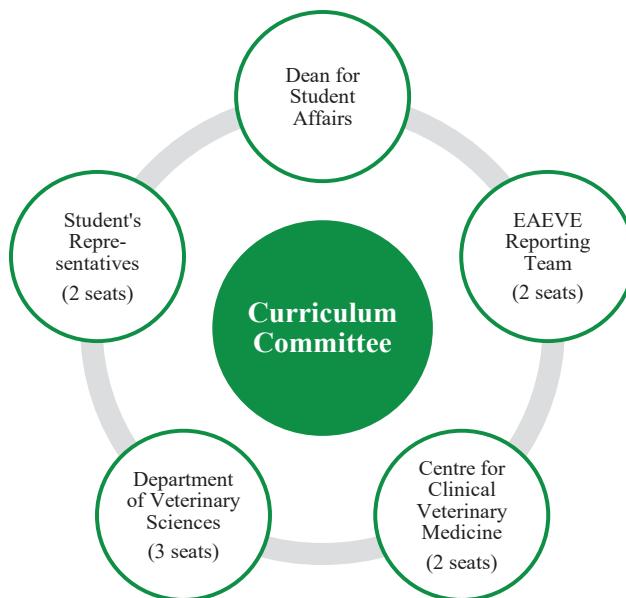
3.4 Curriculum committee

The current curriculum and assessment design is based on the Study and Examination Rules (*Prüfungs- und Studienordnung*) that were completely revised and renewed in 2017 as a result of student, teacher and stakeholder evaluations. Major changes imposed by the new curriculum included:

- reduction in the number of examinations (only one exam per subject), reorganization of exam periods to guarantee timely examinations after completion of subjects and adjustment of exam types;
- reorganization of the clinical training during the 9th and 10th term. Students have to choose one focus clinic. This system reduces the number of students per clinic in order to allow a more intense practical hands-on training;
- the time periods for extramural practical trainings were adjusted accordingly;
- the examination periods were fitted into a yearly schedule so that students can organise their extramural practical training well in advance without scheduling conflicts.

The Faculty of Veterinary Medicine further established a curriculum committee to oversee and improve the curriculum with the following members: Dean of Student Affairs, the EAEVE Reporting Team, as well as representatives of the Department of Veterinary Sciences, the Centre for Clinical Veterinary Medicine and the Student body. Meetings are held on a monthly basis.

The curriculum committee has several major tasks. Issues arising with the ongoing curriculum are discussed and solutions are offered to the students and staff (This does not include personal issues of students that are treated confidentially, mostly in direct contact with the Dean of Student Affairs). Furthermore, the





committee regularly discusses the feedback from staff, students, stakeholders and external suggestions. This contributes to long-term development and continuous adjustment of the curriculum structure.

3.5 Organisation of the External Practical Training (EPT)

3.5.1 Organisation of the EPT

Extramural training is obligatory for each student with a fixed number of hours officially required by the TAppV. Additional internships in all areas of veterinary medicine are possible and very much supported by the Faculty. During extramural work, students gain practical knowledge and skills from a variety of different professionals, clinics and institutions. Students apply for EPTs themselves. Only the agricultural extramural training, completed at the Livestock Centre Oberschleißheim, has a curriculum provided by the Faculty.

The TAppV sets the type of training and duration of the EPT (§55, 57, 60, 61) as well as the general content (§ 56, 62). It also defines the preconditions that have to be fulfilled by the veterinarians in veterinary practice (§ 58). These veterinarians must have worked independently in a practice for at least 2 years, run a veterinary pharmacy and have no conflict with professional legislation over the last past 2 years prior to training. Students can choose whether they work on production and/or companion animals in their extramural clinical training. There is a 4-week practical training after the 2nd preclinical examination to get further training especially in handling, propaedeutics and basic clinical skills. In addition, students spend 16 weeks in extramural practical training facilities during the 9th or 10th semester. Eight weeks are obligatory clinical work, the remaining 8 weeks can be spent in different fields divided in a minimum of 2 weeks intervals. Possible fields encompass for example research centres or universities, pharmaceutical companies, food safety and quality centres, animal nutrition companies, or veterinary clinics and practices. Students work hand in hand with the veterinarians to get deeper insight in the chosen special branch of veterinary medicine. All ETPs can also be conducted abroad, international experience is highly encouraged by the Faculty.

Table 3.5.1. Curriculum days of External Practical Training (EPT) for each student

Fields of Practice		Minimum duration (weeks)	Year of programme
Pre-clinical	Production animals	2 weeks (70 h)*	After the 1 st preclinical exam
	Production animals and/or companion animals ^a	4 weeks (150 h)	After the 2 nd preclinical exam
Clinical	Production animals and/or companion animals ^a	8 weeks (350 h)	During the 9 th or 10 th semester
FSQ & VPH	FSQ & VPH	2 weeks (75 h) + 3 weeks (100 h) + 2 weeks (75 h) = 7 weeks (250 h)	After the 7 th semester After the 8 th semester After the 2 nd preclinical exam
Elective training	Obligatory elective practical training ^b	8 weeks (350 h)	During the 9 th or 10 th semester

* 2 weeks (70 h) if accomplished at the Livestock Centre Oberschleißheim; 4 weeks if done on a maximum of 2 farms registered / certified to offer agricultural training (after the 1st semester)

^a Students can choose whether they spent the time on companion or production animals in either a veterinary practice or veterinary clinic.

^b Students can select whether to choose further clinical practical training or a different veterinary specialised centre (e.g. research centres or universities, pharmaceutical company, animal nutrition company, veterinary public health centres etc.).

3.6 Relationship between External Practical Training Providers and Faculty

A list of all previous EPT providers is kept in the Office for Student Affairs together with comments of students previously visiting those practices, clinics and institutions.

3.6.1 Supervision of the EPT activities

Supervision of EPT activities	
Main person responsible	Prof. Dr. Thomas Göbel
Specialist small animals	Prof. Dr. Ralf Müller
Specialist large animals	Prof. Dr. Rolf Mansfeld
Specialist FSQ	Dr. Brigitte Sperner

3.7 Relationship between External Practical Training Providers and Students

3.7.1 Student's preparation, recording and assessment of their EPT

Based on the new Study and Examination Rules, students retrospectively have to evaluate and grade all EPTs. Appraisal questionnaires developed by the Faculty are used to standardise evaluation of the training programmes by students (see **Appendix**). Due to personal rights, publishing of the evaluation results is prohibited by law. However, students can make an appointment at the Dean for Student Affairs to get insight into the evaluated facilities in the database of EPT locations built by the Faculty.

For each EPT, the students are asked about information on the externship position, a description of clinical activities (seen, carried out under instruction or independently), and a personal assessment of the externship. Students must take responsibility for the selection of a suitable externship position and their own learning during EPT. This includes proper preparation, the motivation for independent learning and active participation.

Students also use a logbook for monitoring progress of their EPT. This logbook lists all of the skills required by the TAppV and has to be kept throughout clinical training. This way students are encouraged to actively pursue the learning of certain (missing) skills and therefore improve the outcome of their EPT.

3.7.2 Complaint process

Students have the possibility to complain officially and/or anonymously about problems that occur during the EPT and their education at the Faculty of Veterinary Medicine and can use the Students' Office as a support and mediator. For the Faculty of Veterinary Medicine, the satisfaction of students and teachers is of utmost importance and relevance. Complaint management is an integral part of quality management in teaching. The goal is to obtain information on how to prevent errors in the future and thus maintain and optimise the quality of teaching. Complaints and criticism identify weaknesses and show the potential for improvement in all areas of teaching.



Anonymous complaints, suggestions, proposals and criticism

For anonymous complaints, suggestions, proposals and criticism, there is a letterbox available in front of room B 104. Written messages can be sent directly to the respective representative or to the Dean of Student Affairs. The Student Council can also act as a contact and mediator.

Personal complaints, suggestions, proposals and criticism

For personal complaints, suggestions, proposals and criticism, students can always contact the respective representatives directly by mail or in a personal meeting. All contact details are available on the Faculty's homepage.

Processing of complaints, suggestions, proposals and criticism

The respective contact persons process the complaints, suggestions, proposals and criticism received. As a rule, the Dean of Student Affairs and, if necessary, the Dean's Office and/or other institutions involved are consulted. The information received is anonymized as far as possible.

Solving problems, deriving measures

Depending on the type of complaint, suggestion or criticism received, problems are discussed with all those involved, solutions are worked out and measures are derived. Measures and solutions are communicated openly.

Monitoring and feedback

Further measures are communicated externally, and feedback is requested from all departments involved.

3.8 Comments on Standard 3

Due to COVID19 the quality and availability of digital learning tools has greatly increased. There is not a lot of freedom to modify the content of the curriculum, because the main parts are regulated by a national law. The TAppV specifies how many hours each subject should be taught, and it requires compulsory “interdisciplinary subjects”. In these interdisciplinary subjects, various aspects of veterinary medicine are integrated in one lecture. Substantial tracking (specialisation) within the undergraduate veterinary curriculum currently is not possible given the German legal legislation on veterinary education. External practical training (EPT) are required but explicitly outsourced to the veterinary profession. The Faculty unfortunately does not have a legal basis to implement a high level of (quality) control on private facilities.

3.9. Suggestions for improvement on Standard 3

Further horizontal and vertical integration of knowledge is currently discussed and developed by the Curriculum Committee, aiming at further improving teaching outcomes in the future. First attempts are being made to improve the quality of the EPT. Currently, different types of positive feed backs are discussed to increase the motivation for EPT providers to improve the quality of teaching. This will be voluntary, but nevertheless may have an impact on the EPT quality.



4. Facilities and equipment

4.1 Factual information

4.1.1 Location and organisation of the facilities used for the curriculum

The Faculty is mainly divided into two main Campuses, namely the City Campus and Campus Oberschleißheim. The City Campus is only 200 m away from the historical LMU building within the city centre. The Campus Oberschleißheim is going to be the new main campus, and is currently under construction. It is located within the north of Munich with a distance of 13 km to City Campus. Currently, all clinics with exception of the Small Animal Clinic are completed and running at that location. In addition, a new lecture hall with cafeteria has been completed. During construction, some individual institutes are temporarily relocated to the Campus Martinsried, which is west of Munich's city centre, close to main parts of the LMU Medical Faculty and the Centre for Biology.

4.1.2 Strategy and programme for maintaining and upgrading the current facilities and equipment

Premises and buildings used by the Ludwig-Maximilians-Universität belong to the State of Bavaria or LMU itself in its function as Corporation under Public Law. As a general principle, the LMU provides a central building office (Referat VII.6), responsible for basic maintenance, safety and functionality of these premises and buildings and for their essential infrastructure (e.g. water supply, electricity). Specific needs and conditions of laboratories and clinical properties (including animal shelters, stables) are controlled by qualified internal staff (e.g. nurses, technicians, researchers), who indicate specific requirements to the institutional management and/or janitors and craftsmen on site. Moreover, there are regular controls and audits by central LMU staff, assuring work safety, biosafety and environmental safety. Department/clinic heads are responsible for the upgrade, maintenance and extension of laboratory equipment and animal shelters. This includes the care for and coordination of core units. All constructional changes are coordinated between the Faculty and the LMU.

All new buildings at Campus Oberschleißheim have been designed according to the latest standards. Care also is taken to provide state-of-the art facilities and equipment at institutions still at the Campus next to the English Garden, to guarantee best education, safety and patient care. Budgets for refurbishment and rebuilding are reported by the clinical and preclinical departments on a yearly basis and controlled by the LMU central administration. The volume of reinvestment into laboratory and clinical facilities varies between the different departments. The Centre for Clinical Veterinary Medicine provides a yearly amount of € 10.000 per unit reinvestment budget from central accounts plus € 60,000 in total for extraordinary research equipment, not covered otherwise (e.g. by grant money), to foster clinical research and patient care and to support laboratory excellence.

4.1.3 Legislative compliance

The Central Administration of the University of Munich is responsible for ensuring that all physical facilities comply with all relevant legislation. With its areas of occupational safety, biological safety, fire protection, transport of dangerous goods, radiation protection and animal protection, the Office of Occupational Safety and Sustainability of the University of Munich plays a central role in maintaining compliance with relevant legislation. Employees of this Office visit the Faculty regularly to identify deficiencies and give advice on improving the current situation.



4.2 Teaching facilities

4.2.1 Lecture halls

Location	Seats	Size in m ²
<i>City campus</i>		
Lecture Hall "Mittelbau"	96	108
Lecture Hall for Anatomy, Histology and Embryology	150	155
Lecture Hall Veterinary Pathology	146	138
Lecture Hall Zoology	230	184
Lecture Hall Small Animal Medicine	173	217
Lecture Hall Surgery	161	221
Lecture Hall Reproduction	176	217
<i>Campus Oberschleißheim</i>		
Central Lecture Hall	300	302
Lecture Hall Production Animals	90	120
Lecture Hall Surgery at the Clinic for Horses	161	226
Livestock Centre Oberschleißheim	120	269
<i>Campus Martinsried</i>		
Molecular Animal Breeding and Biotechnology	140	200

All lecture halls are equipped with projectors, TV, and WLAN access. New lecture halls in Oberschleißheim are also equipped with power plugs for laptops and tablets. Recently, lecture hall cameras were purchased and installed in several halls to allow livestream broadcasting of lectures. This is mainly used for hybrid teaching (teaching in presence with concurrent streaming for external attendance) and for transmission to other lecture halls. In the lecture halls of the clinics and in Oberschleißheim, there is also the possibility to present live animals, e.g. horses, cattle and dogs. This is especially useful for propaedeutics and allows live demonstrations on animals.

4.2.2 Group work facilities

Location	Type of room	Number of rooms	Size in m ²	Equipment
<i>City campus</i>				
Institutes	Classrooms	1	44	Computers
	Seminar room	45	196	Projector, flip charts, white boards
	Seminar room with library	2	77	
Clinics	Exercise rooms	2	53	
	Classrooms	3	159	Projector, flip charts, white boards
	Seminar room	1	35	Projector

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<i>Campus Oberschleißheim</i>				
Institutes	Classrooms	3	359	Projector, flip chart, white board
	Seminar room with library	1	87	Projector, flip chart, books
	Exercise room	1	69	
Clinics	Classrooms	2	41	Media classroom
	Seminar rooms	6	184	Computers
	Seminar rooms with library	1	42	Books
	Doctoral students room	1	56	Computers
	reading room	1	16	
<i>Campus Martinsried</i>				
Institutes	Seminar rooms	3	1022	
	Seminar room with library	1	40	

4.2.3 Practical work facilities

Location	Type of room	Number of rooms	Size in m ²	Equipment
<i>City campus</i>				
Institutes	Teaching Lab-loratories	9	392	Microscopes, plate reader, qPCR, centrifuges, ultrasound general laboratory equipment, equipment for standard histological stains and immunohistochemistry, beamer, white board, workstations for drug compounding
	Dissecting room	1	249	Projector, camera, computers, displays
	Microscopy room	5	92	Fluorescent microscope, clinical pathology microscope, dissecting microscopes
	Histo-pathology seminar room	1	153	Microscopes

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	Anatomical collection room	1	78	Display
	Demonstration room	1	178	Microscopes, slide scanner, computers, projector
Clinics	Teaching laboratories			
	Microscopy room	1	20	
	Surgical training rooms	3	80	Dental x-ray unit, dissection tables, projector
<i>Campus Oberschleißheim</i>				
Institutes	Teaching laboratories	2		Used in parallel for routine microbiological diagnostics
	Feed evaluation lab	1	26	
	Demonstration rooms	3	158	Fully equipped meat cutting and processing facility
Livestock Centre Ober-schleißheim	Lab-laboratories (only one is a teaching lab)	1	17	
		1	17	
		1	17	
	Microscopy room	1	30	
Moor-versuchs-gut	Demonstration room	1	15	
Clinics	Teaching laboratories	10	302	Microscopy, blood gas analyser, device for measurement of rumen chloride, equipment for bacteriology, virology, parasitology
	Microscopy room	1	12	Microscopes
	Classroom for clinical procedures	1	28	Claw trimming, reproduction, seminars
<i>Campus Martinsried</i>				
Institutes	Microscopy rooms	2	41	
	Exercise room	2	50	



<i>Chemistry/Biochemistry Laboratory for Students – Pettenkoferstraße</i>				
Institutes	Wet preparation practice room + supplementary room	2	366	

4.2.4 VETSkillsLab

A new skills lab has been established in 2018 (6 rooms, 302 m²), offering 18 different stations (in 2-hour course blocks each with 3 stations) for propaedeutics, reproductive medicine, surgery and laboratory work. Starting from the 2nd semester, students can either practice independently or under the supervision or with the help of tutors. The procedure to be practiced is explained at each station through written instructions, photos or videos. Equipment comprises laboratory instruments, microscopes, dummies, models of various species, surgical instruments, dressings, and different medical tools. In addition, elective courses lasting several days and held by veterinarians are offered as well as compulsory courses for students in their practical year at the individual university clinics. Further information can be found on the VETSkillsLab website: https://www.vetmed.uni-muenchen.de/lehre_vet/vet-skills-lab/index.html.

4.2.5 Study and self-learning facilities

Location	Type of room	Number of rooms
<i>City campus</i>		
Institutes	Practical training/doctoral student's room	1
	Break room	1
	Seminar room	39
	Anatomic collection	1
	Libraries	5
	Computer room	1
Clinics	Library	1
	Computer rooms	2
<i>Campus Oberschleißheim</i>		
Clinics	Leisure room for students	1
	Library	3
	Reading room	1
	Workroom	3
Livestock Centre Oberschleißheim	Computer room	1
Moorversuchsgut	Library	1



4.2.6 Catering and canteens

Campus city

Main university canteen

~ 10 minutes walk

Opening hours (during lecture period):

Mon-Fri **11:00 am to 2:30 pm**

Fri **11:00 am to 2:00 pm**

Opening hours (during non-lecture period):

Mon-Fri **11:00 am to 2:00 pm**

Campus Oberschleißheim

StuBistroMensa Oberschleißheim

Located on Campus

Opening hours:

Mon-Fri **11:00 am to 2:00 pm**

Additionally, catering services are offered every morning in the Small Animal Clinic on the city campus as well as in the Clinic for Ruminants in Oberschleißheim. Moreover, there is a university cafeteria accessible for vet students within a 3-minute walk from city campus at LMU law school. Numerous bakeries, cafes, and restaurants are within walking distance in the direct neighbourhood to the city campus. In Oberschleißheim, two supermarkets are in close proximity to the campus.

4.2.7 Locker rooms

Location	Number of rooms	Number of lockers
<i>City campus</i>		
Institutes	4	410
Clinics	4	210
<i>Campus Oberschleißheim</i>		
Institutes	2	35
Clinics	6	284
Livestock Centre Oberschleißheim	2	108
<i>Chemistry/Biochemistry Laboratory for Students – Pettenkoferstraße</i>		
Institutes	2	58

4.2.8 Accommodation for on-call students

Location	Number of rooms	Equipment
<i>City campus</i>		
Institutes	3	Bed, couch, desk, chairs, wardrobe, cupboard
Clinics	8	Bed, table, chair, wardrobe, washbasin, shower
<i>Campus Oberschleißheim</i>		
Clinics	7	Beds, table, chair, sink, locker, phone, bathroom, kitchenette, computers

4.2.9 Leisure

The Sport Centre of Munich Technical University (Zentraler Hochschulsport der Technischen Universität München, ZHS) offers students and employees of all universities in Munich, and Freising/Weihenstephan a wide programme of many different sporting activities. Participants can use the facilities offered by ZHS for free training or can choose from approximately 600 courses. The main sports centre is located at the Olympic Park in Munich. Additionally, the Olympic swimming hall as well as a water sports area at the Starnberger See is used for



swimming, sailing, surfing and other water sports. The olympic regatta facility in Oberschleißheim is used for canoeing and rowing. Courses and tours in the Bavarian Alps are also organised regularly. Further information can be found on the ZHS homepage: www.zhs-muenchen.de/startseite/.

Other leisure activities organised by the LMU comprise for example many different choirs and orchestras, cinemas, theatre groups, and parties. The city-campus is located directly next to the beautiful English Garden, where students can spend recreational time in nature and can go swimming in summer. It is also centrally located in the city centre and thus offers many opportunities for leisure activities. In Oberschleißheim there is a cafeteria, the StuCafe, for students with coffee and snacks, as well as indoor and outdoor seating. The olympic regatta facility is not far away and there are shopping facilities very close.

The Student Council of Veterinary Medicine organises many leisure activities for students, e.g. a summer festival, a Christmas market, city rallies and parties on and off the Faculty's premises.

4.2.10 Sanitary facilities

Location	Type of room	Number of rooms
City campus	Toilets	103
	Washing facilities	79
	Shower facilities	30
Campus Oberschleißheim	Toilets	59
	Washing facilities	32
	Shower facilities	34
Campus Martinsried	Toilets	28
	Washing facilities	8
	Shower facilities	8
Chemistry/Biochemistry Laboratory for Students – Pettenkoferstraße	Toilets	2
	Washing facilities	2

4.2.11 Staff offices and research laboratories

Location	Type of room	Number of rooms
<i>City campus</i>		
Dean's offices	Staff offices	1
Institutes	Staff offices	328
	Research laboratories	79
Clinics	Staff offices	38
	Research laboratories	1
<i>Campus Oberschleißheim</i>		
Institutes	Staff offices	24
	Research laboratories	40
Clinics	Staff offices	47
	Research laboratories	27
Moorversuchsgut	Research laboratories	15
Livestock Centre Oberschleißheim	Staff offices	14
	Research laboratories	5
<i>Campus Martinsried</i>		
Institutes	Staff offices	55
	Research laboratories	54



4.3 Livestock facilities, animal housing, core clinical teaching facilities and equipment used for teaching purposes

4.3.1 Premises for housing

Healthy animals

Location	Species	No. of	Size in m ²
		rooms/stabls/yards/ponds	
<i>Campus Oberschleißheim</i>	Bovine	10	2545
	Alpakas	1	27
	Pigs	11	1685
	Backyard poultry, pet birds, birds of prey, reptiles	2	420
	Fish	1	20.000 L

Research animals

Location	Species	No. of	Size in m ²
		rooms/stabls/yards	
<i>City campus</i>	Rabbits	2	60
	Pigs	3	98
	Rodents	7	135
	Mice	3	41
	Chicken	8	305
	Fish	4	70
	Diverse	5	78
<i>Campus Oberschleißheim</i>	Horses	6	1126
	Pig	1	262
	Chickens	2	320
<i>Campus Martinsried</i>	Mice	7	124
<i>Moorversuchsgut Badersfeld</i>	Pigs	24	17.712
	Cats	6	120

Hospitalized animals

Location	Species	No. of	Size in m ²
		rooms/stabls/yards	
<i>City campus</i>	Dogs	9	279
	Cats	4	81
<i>Campus Oberschleißheim</i>	Horses	5	570
		4 paddocks	48
	Ruminants	8	466
		15 igloos	44
		4 tents	64
	Sheep	1	13
	Birds	8	305



4.3.2 Premises for clinical activities, diagnostic services, and others

Clinical activities

Location	Type of room	Number of rooms	Size in m ²	Equipment	Species	Discipline
<i>City campus</i>						
Institutes	Consulting rooms	2	47		Companion animals	Behaviour
Clinics	Consulting rooms	18	353	General examination equipment	Companion animals	Internal medicine, surgery
	Small procedure rooms	5	170	Anaesthesia machines, monitoring and measuring equipment, oxygen cages, video surveillance, ultrasound, EEG, EMG, hearing test, skin laser, laser lithotripsy, endoscopy, dialysis, plasmapheresis, haemoperfusion, treadmill for computerised gait analysis and underwater treadmill	Companion animals	Internal medicine, surgery
	Surgical suits and supplementary rooms	12	302	Anaesthesia machines, monitoring and measuring equipment, C-arm, arthroscopy, endoscopy, eye laser	Companion animals	Surgery
	Diagnostic imaging and radiation therapy area	7	17	Digital radiography with dental radiography and fluoroscopy, CT, MRI, scintigraphy, gamma camera, 3D-printer	Companion animals	Radiology

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Campus Oberschleißheim						
Livestock Center Ober-schleiß-heim	Diagnostic imaging and radiation therapy area	2	60	DXA, MRI	Production animals	Internal medicine, reproduction
Institutes	Consulting rooms	1	22	Stereo-microscope, ration calculation software	Companion animals, equine, ruminants, exotic species	Animal nutrition
Clinics	Consulting rooms	1	27	Crush, diagnostic equipment	Ruminants, new world camelids	Internal medicine, reproduction, surgery
		1	36	Ultrasound, surgery equipment, crane, diagnostic equipment	Porcine	
		1	17		Equine	Internal medicine, reproduction, surgery
		4	90	Ultrasound, microscope, surgical equipment, ophthalmologic equipment, wound laser, PET plasma	Birds, small mammals, reptiles, amphibians, ornamental fish	Internal medicine, ophthalmology, surgery, reproduction, herd health management
	Small procedure rooms	2	28	Medication, computer, phone, printer	Ruminants, new world camelids	Internal medicine, reproduction, surgery
		9	1216	Semen collection, embryo transfer, riding hall, lunging circle	Equine	Internal medicine, reproduction, surgery

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Surgical suits and supple- mentary rooms	4	17	Portable crushes, claw trimming tables, endoscope	Ruminants, new world camelids	Internal medicine, repro- duction, surgery
	3	59		Porcine	
	3	11		Equine	Surgery
	1	20	OP microscope, surgical equipment	Birds, small mammals, reptiles, amphibians, ornamental fish	Surgery
	3	41	Mobile and stationary x-ray, computers and X-ray reader	Ruminants, new world camelids	Radiology
	3	155	X-ray, CT, MRI	Equine	Radiology
	2	11	Digital x-ray, digital teeth x- ray, mobile ultrasound	Birds, small mammals, reptiles, amphibians, ornamental fish	Radiology

Diagnostic services including necropsy

Location	Type of room	No. of rooms	Size in m ²	Equipment	Species	Discipline
<i>City campus</i>						
Several Institutes	Diagnostic lab- oratories	11	226	Complete equipment for histological standard stains, immunohisto-, cytochemistry, immunofluorescence, in-situ hybridisation, semi- and ultrathin section preparation, nerve fibre teasing preparation, cytology	Companion and large animals, wildlife animals	Pathology
				Complete equipment for preparation, extraction and analysis of		

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				toxicological samples including 2 x HPLC and 1 GC/MS		
		6	158	Complete equipment for bacteriology, virology, mycology	Companion and large animals, wildlife animals	Bacteriology, virology, mycology
	Necropsy hall + preparation rooms	1	144	Crane, fixed and mobile necropsy tables, photo and video equipment, microscopy	Companion and large animals, wildlife animals	Pathology
		3	35			
Clinics	Diagnostic laboratories	9	162	Cytocentrifuges, microscopes, slide stainer, blood count and differentiation analyser, clinical chemistry, cytology, faecal flotation automated analysis, 4-channel coagulometer, blood gas analysis, automatic urinalysis, NH3-measurement	Companion animals	Internal medicine, surgery
<i>Campus Oberschleißheim</i>						
Other Institutes	Diagnostic laboratories	2	78	Equipment for microbiological and mycological examinations	/	Food microbiology
		3	180	Equipped for microbiology	Ruminants	Food microbiology
		11	377	Laboratory equipment for feedstuff analysis		Animal nutrition
Clinics	Diagnostic laboratories	57	194	Fluorescence microscopes, haematology device, autoanalyzer	Large animals	Internal medicine, reproduction

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				clinical chemistry, divide for analysis of blood gas, centrifuges		
	21 (2 parallel used for teaching)	245	Equipment for clinical laboratory diagnostics, laminar flows, autoclaves, histology, classical bacteriology and mycology, parasitology, virus cultivation, molecular diagnostics, serology, protein expression	Birds, small mammals, reptiles, amphibians, ornamental fish	Clinical diagnostic laboratory, virology, bacteriology, mycology, parasitology, histology	
Necropsy hall	1	23	Necropsy table	Ruminants	Pathology	
	1	31	Mobile necropsy tables, photo and video equipment	Birds, reptiles, ornamental fish		
<i>Campus Martinsried</i>						
Institutes	Diagnostic laboratories	5	107			Parasitology

Others: Research activities

Location	Type of room	Number of rooms	Size in m ²	Equipment	Species	Disciplines
<i>City campus</i>						
Institutes	Consulting room	1	15	Fish tanks, aquaria, water chemistry analyser	Fish	Fishery biology
Clinics	Surgical suits	1	18	Operating table, anaesthetic machine with monitoring, osteosynthesis bone surgery drill, suction unit	Companion animals	Surgery
	Rounds room	1	28	Computers, white board	Companion animals	Internal medicine



Campus Oberschleißheim						
Moor-versuchs-gut	Consulting rooms	3	56		Porcine	Experi-mental medicine / laboratory animal science
	Surgical suits + supplementary rooms	3	103	Mobile X-ray unit, inhalation anaesthesia, echo-cardiography	Porcine	Experi-mental medicine / laboratory animal science
Clinics	Laboratories	9	181	Incubators, microscopes, robot for pipetting, flow cytometer, centrifuges	Large animals	Internal medicine, reproduction

4.3.3 Description of the equipment used for clinical services

The diagnostic clinical service offers ultrasound, radiographs (mobile and stationary units), MRI, CT, scintigraphy, EEG, ECG, TCMEP, optical coherence tomography, endoscopes, microscopes, ophthalmology equipment, video-otoscope units, claw trimming equipment and table, laboratory equipment (blood work up, milk investigation, bacteriology), CaSA system for evaluation of semen, equipment for semen freezing as well as embryo collection and culture, equipment for ovum-pick-up procedures, measuring devices for stable climate and the animal nutrition ration calculation software Diet Check Munich®.

In addition to routine surgical equipment, the Faculty offers specific physiotherapy equipment such as treadmills for companion animals and horses, laser therapy, cold plasma therapy, PENS (percutaneous electrical nerve stimulation), magnetic resonance therapy, shock wave therapy horse walker, and a farrier on-site.

4.3.4 Description of the premises used for the practical teaching of FSQ & VPH

The production of different meat products is demonstrated as part of the course in food hygiene. These demonstrations are carried out in the fully equipped meat cutting and processing facilities of the Institute. After passing through the hygiene lock, the two rooms of the facilities (processing and cutting) are equipped with cold rooms, ice flaker, brine injector, grinder, bowl cutter, sausage filler, smoking chamber, dry aging cabinets, vacuum packaging and slicing machines.

The main milk seminar room is equipped for teaching microbiological, chemical and microscopical investigation of milk and milk products. Other seminar rooms are used for teaching sensory properties of milk, yoghurt, cheese etc.



4.4 Clinical Teaching Facilities.

4.4.1 Organization and management of the veterinary teaching hospitals and ambulatory clinics

The clinics of the Faculty offer a wide range of services including general and specialised consultations (see list below). Appointments are offered 5 days per week from Monday to Friday, while emergency services operate constantly 24/7 all year round.

The clinics offer the following general and specialised services

Small animal internal medicine

General internal medicine (gastroenterology, haematology, respiratory tract, endocrinology, urinary tract), dermatology and allergology, cardiology, neurology, oncology, nutrition, physical therapy, emergency and critical care, anaesthesiology, pain management, health care and infectious diseases, x-ray, ultrasound, contrast enhanced ultrasound, teleconsultation

Small animal surgery and reproduction

Soft tissue surgery, orthopaedics, dentistry, ophthalmology, physical therapy, anaesthesiology, perioperative intensive care, pain management, x-ray, ultrasound, CT, MRT, emergency and critical care; reproduction, andrology, neonatology

Equine

General internal medicine, infectious diseases, dermatology, cardiology, neurology, foal intensive care, soft tissue surgery, orthopaedics, gait analysis, farriers, ophthalmology, dentistry, oncology, reproduction, andrology

Ruminants

General internal medicine and surgery, orthopaedics, reproduction, andrology, calf health, herd health management, small ruminants, new world camelids

Poultry, fish, reptiles, amphibians and small mammals

General internal medicine and surgery, ophthalmology

Swine

Herd health management, diagnostics, treatment, and prophylaxis

Hands-on training for students plays a central role in the day-to-day activities in all clinics of the Faculty. Students have the opportunity to choose between one of the following clinical focus areas during their clinical rotations: small animal internal medicine, small animal surgery and reproduction, equine, ruminants, poultry/fish/reptiles/amphibians/small mammals and swine. During the 9th term, they spend 12 weeks in the respective clinic and participate in the clinical day-to-day activities. The structure of the clinical rotations ensures that the number of students is kept at a maximum of 20 per clinic. This ensures that there is a maximum of up to 2 students per patient. The long period of 12 weeks allows the students an intensive and effective training period, so that they are subsequently able to perform specific tasks independently. Students also rotate within a clinic which allows them to experience different services and thus gain a broad insight. Students are directly assigned to a clinical supervisor and thus follow clinical cases from admission to discharge and follow-up. In addition, they are involved in communication with patient owners and are allowed to independently take history and handle owner communication during the patient's inpatient stay. To ensure that all students independently perform certain hands-on procedures required by the TAppV during the clinical training, students carry a logbook to document which hands-on procedures they have already performed. The logbook consists of a general part with basic across-species skills and a species-specific part with core and advanced skills (see 3.3.1). Due to many highly specialised services at our



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Faculty, students experience special procedures in addition to the general practical activities. In addition to the training on real patients, students can also perform procedures on cadavers in order to learn specific procedures. In addition to the compulsory training during clinical rotation, students can work as student assistants in clinics in the emergency service from the first term onwards. This allows them to learn practical skills at a very early stage of their studies and to develop an individual profile of add-on skills.

As a university institution with a role model function for students, staff and stakeholders, the faculty has a duty to ensure that national practice standards are always met. This is also regulated by law according to §2 of the professional code for veterinarians in Bavaria (*Berufsordnung für Tierärzte*), by which any veterinarian is obliged to practice his profession conscientiously. This also include continuous education after graduation.

4.5 Students' access to diagnostic and therapeutic facilities

During their clinical education, students have access to all parts of the clinics under supervision, including the laboratory, pharmacy and the procedure rooms. In addition, students are encouraged to enlist in additional rotations in our clinics, to ensure the opportunity to rotate through all services desired by the individual. Students in earlier semesters are encouraged to bring up problems with their own animals during lectures and electives. Frequently, those patients will then be seen in the clinics with the student/owner participating in the diagnostic work-up. It is also possible for all students to make an appointment with individual faculty members, clarify questions they have and bring in samples from own animals and assist in processing and evaluation of such samples.

The Clinic for Horses and the Clinic for Small Animal Surgery and Reproduction offer the possibility to clinical traineeship. This offer is available for students of different clinical semesters. During the traineeship the students have access to all parts of the clinic. Students can further attend the behaviour therapy consultations at the Chair for Animal Welfare, Ethology, Animal Hygiene and Animal Husbandry or present their own animals with behavioural problems at the consultation.

During clinical rotation and practical training, students also have access to the Institute for Veterinary Pathology (necropsy hall, diagnostic laboratories, electron microscopy) and are introduced to the different methodologies, diagnostic procedures and current research activities. If students seek information on disorders of their own deceased pet, they are provided with a free postmortem work-up and a report by senior staff members. The institute dedicates itself to an open bench policy and supports research ideas of students of clinical semesters and of doctoral students at other institutes or clinics, if they were transformed in a structured and promising study plan. During internships as well as during the science block, that can be chosen instead of a specific clinic during the practical year, students also have access to the Institute of Infectious Diseases and Zoonosis.

In the Institute for Food Safety and Analytics students have access to diagnostic and research laboratories during electives involving laboratory work and during practical training in hygiene control and food control which is offered to approximately 25 students per year. In the Institute of Milk Hygiene and Technology, students have access to diagnostic and research laboratories (3). During practical training approximately 25 to 30 students/year are educated in control of microbiological contents in milk and milk products.

The Institute for Animal Nutrition and Dietetics offers students a free diet calculation for their pet, if they actively participate in the process. They will be supervised in the use of the diet calculation software and take part in the adaptation of the diet according to individual needs or diseases. Students can also bring a feed sample from their own stable / farm to conduct a sensorial evaluation with the help of experienced academic staff. It is possible to do voluntary



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internships at the Institute for Animal Nutrition and Dietetics, or to spend up to 8 weeks of the obligatory externship at this institution. Students will be mainly present in the nutrition consultation service but have also possibilities to access the feed sample laboratories and the animal facility during research projects. Students who enlist for the "research focus" in the clinical rotation will spend more time in the animal facility, in the laboratories and with literature research, if possible, conducting their own research project under supervision, but they also might take part in the nutrition consultation service. In the elective in animal nutrition, students can vote to visit the animal facility, the laboratories or listen in to the telephone hours of nutrition consultation at the Institute for Animal Nutrition and Dietetics.

In order to enable equal learning and inclusion for all students, attention is paid to accessibility in the teaching facilities. This includes (wheelchair accessible) elevators, handicapped accessible entrances, special seats in the lecture halls for people with disabilities and handicapped accessible toilets. Due to the structure of the old buildings on the inner-city campus, the accessibility we strive for cannot always be implemented to our complete satisfaction, but on the Oberschleißheim campus the conditions for barrier-free access are largely in place in the new buildings. The lecture hall in Oberschleißheim, for example, has an induction loop in the floor that can be received by hearing systems of students with hearing aids or cochlear implants. Both, in the Clinic for Ruminants and at the Institute for Food Safety, we can offer changing tables for students.

4.6 Isolation facilities

Location	Species	No. of places	Size in m ²
City campus	Companion animals	37	84
Campus Oberschleißheim	Production animals	12	165
	3 igloos		12
	Equine	4	30
	Birds, small mammals, reptiles and ornamental fish	12	16

4.7 Ambulatory clinic and Herd Health Management for production animals

Herd health management is taught via lectures and courses in the semesters 5 to 7. There are clinical demonstrations during semester 8. In clinical rotations (semester 9 and 10), students are trained in herd health management and practical skills, e.g. transrectal palpation, pregnancy diagnosis by ultrasound, blood and milk sampling, body condition scoring, as well as herd data analysis during their farm-visits.

The Mobile Clinic holds the role of the farm veterinarian for about 60 dairy farms providing individual animal care and herd health services. In addition, there is a cooperation with another veterinary practice. The ambulances (3 x Volkswagen vans T7) are well equipped to the standard (e.g. modern car pharmacies, portable ultrasound and notebooks (Toughbooks) with herd management and administration software) of a modern large animal practice, including herd health management and diagnostics. In the field of "Herd Health Management" recognized test procedures and modern measurement techniques and laboratory methods are used. The students are actively involved in all services and activities including development of herd problem solutions. All visits of the mobile clinic are charged according to the national fee schedule for veterinarians.



4.8 Transportation

Vehicles used for	Numer of vehicles	Size	Equipment
Transportation of students	1 van	6 seats	Equipment for clinical treatments and herd health management
	2 vans	8 seats	Equipment for herd health management
	3 vans	9 seats	Equipment for clinical treatments and herd health management
	6 vans	Up to 4 or 5 seats	Equipment for clinical treatments and herd health management
Transportation of live animals	1 car 1 van 7 Trailers	9 seats	Boxes in different sizes and tubs for dead animals/organs
Transportation of cadavers/organs	2 vans 1 van 2 cars	3 seats 5 seats 4 seats	Rear cargo space, boxes Boxes Boxes

4.9 Operational policies and procedures

4.9.1 Decisional process concerning changes in facilities, equipment, biosecurity procedures, good laboratory practices and good clinical practices

The ultimate arbiters of those processes are the directors of the individual institutes and clinics, that generally are assisted by the various authorised officers appointed by those directors or LMU central administration. Those processes are then communicated to staff via regular meetings and to students at the beginning of the semester in the first lecture, the first hour of a course or practicum or (with clinical rotations) in the introductory days to the clinical rotations. In fall of 2021, a quality assessment manager was appointed by the Centre for Clinical Veterinary Medicine that gathered the various procedural information, standard operating procedures and certification information. In a series of meetings, the common grounds and deficiencies were identified, and first steps agreed on to address those deficiencies. The team around the quality assessment manager evaluates the processes and guidelines currently in place and formulates recommendations, which of those can be uniform for the entire Faculty and if and how they should be changed, and which are individual to certain faculty units. Stakeholders are informed of those changes in various ways. Alumni receive a regular newsletter with updates from the Faculty. Industrial companies are informed via individual meetings that occur regularly for research, distribution or purchase reasons. Veterinary associations are updated on their regular meetings as many members of the faculty are involved in the administration of such bodies, the organisation of continuing education for general practitioners, the development of new guidelines for specialisation and continuing education and the examinations of postgraduate veterinary titles. Clients are informed via posters and handouts in the waiting room of the various clinics as well as the website of those clinics.

The Biosafety Manual of the Faculty is provided in the **Appendix**. It is divided in two parts a general part that applies to all faculty units and a specific part, where individual guidelines from the different faculty units are listed. With its areas of occupational safety, biological safety, fire protection, transport of dangerous goods, radiation protection and animal protection, the Office of Occupational Safety and Sustainability of the University of Munich plays a central role as the contact for employees and supervisors in the LMU when it comes to safety. After creating



the Manual, the Head of the Office of Occupational Safety and Sustainability reviewed the different sections of the Manual. This review is repeated on a regular basis, the current version was finalised in March 2022.

4.10 Comments on Standard 4

Many facilities such as the bovine and equine clinic are state-of-the-art facilities due to their recent construction. Other facilities (microbiology) are currently under construction and will be completed in the near future. During the construction time, either the old facilities will be in continuous use or are/will be temporarily relocated. In either case their adherence to safety standards is assured by the central Office for Occupational Safety and Sustainability of the University of Munich.

4.11 Suggestions for improvement on Standard 4

In the coming few years the completion of the Campus for Veterinary Medicine in Oberschleißheim will result in state-of-the-art facilities for the entire Faculty. Institutes and clinics still in the planning and construction phase need to spend significant amounts of time and thought to achieve the optimal outcome of those efforts.



5. Animal resources and material of animal origin

5.1 Animals, cadavers, and material of animal origin available for practical training

5.1.1 Global strategy

By admission to the LMU veterinary teaching hospitals, the owners formally consent to the involvement of undergraduate and postgraduate students in diagnostic work-up, patient care and treatment. That way all students have access to a sufficient number of animal patients through compulsory and elective courses as long as all animal welfare, safety and biosafety requirements are met. During these courses, students actively experience animal handling and state-of-the-art structured clinical approaches, both supervised and by selected tasks, on their own. By their didactic embedding in mostly species-oriented clinical units plus ambulatory service for livestock farms, stables and zoological gardens and EPTs, students are confronted to a broad variety of species, their disorders and (herd) health management, in order to experience the panel of animals, conditions, duties and owners, veterinarians in the field have to deal with and thereby to reach the Day-One Competences level. Non-invasive procedures further are exercised on a stock of animals, permanently housed at the Faculty of Veterinary Medicine (cats, birds, exotics, horses, cattle, small ruminants, pigs) and the associated farm (*LVG*: cattle, small ruminants, pigs).

All experimental procedures are conducted and controlled in accordance with EU Directive 2010/63 and the German Animal Welfare Act (*Tierschutzgesetz* as amended by June 2020), supported by the Animal Welfare Officer of the Faculty and approved by the respective authority of the Government of Upper Bavaria.

To train relevant procedures in depth, students further have access to a well-equipped Skills Lab that models certain clinical situations that cannot be easily trained on living animals or that require repetition. Wherever a training of invasive procedures is required, students are led to train with carcasses donated for veterinary education. Likewise, gross pathology and necropsies are demonstrated and taught on carcasses, organs and tissues donated by owners, zoological gardens and slaughterhouses or delivered for diagnostic reasons to the Institute of Pathology. Possible shortage of actual cases, demonstrable organs and tissues is compensated by supplementation with electronic teaching material including instruction videos to ensure that they reach the foreseen Day-One Competences.

5.1.2 Specific strategy of the Establishment in order to ensure that each student receives the relevant core clinical training before graduation

To ensure that all students receive a comprehensive clinical training before graduation, the Faculty takes different actions. Students go through clinical rotation during the 9th semester and spend 12 weeks in a clinic they can select beforehand. Depending on their field of interest, they can also choose a so called “research block” (*Wissenschaftsblock*) in one of the institutes (e. g. Institute for Infectious Diseases and Zoonosis, Institute for Veterinary Pathology).

All clinics have day patients and hospitalized animals and provide an overall balance between first opinion and referral patients that can vary. The balance between individual patients and population medicine differs from clinic to clinic and is mainly focused on production animals, although also many companion animal breeders are clients of the small animal clinic.

The period of 12 weeks enables students to familiarize themselves and become involved in the clinical setting. The students receive a general introduction on their first day of rotation as well as introduction to examination techniques, literature research, feeding and diagnostic lab. Students are provided with a detailed schedule so that they have an overview of the topics to be covered during the 12 weeks. The schedule should also encourage them to self-learn in advance.



By rotating within the chosen clinic, students have the chance to experience all departments of the clinic, including treatment of acute and chronic cases, ambulatory, and hospitalized patients, to participate in field excursions and to exercise standard and advanced procedures. In general, clinical practical skills are acquired through individual services where students are initially taught and then assist in clinical procedures. Some of those, which are important Day-One Competences are also performed by the students themselves under the supervision of experienced clinicians. To guarantee that each student tracks her/his clinical skills, a logbook was developed by the Faculty's Logbook Committee. The logbook allows students to document which clinical procedures they have already performed and should perform in the future to develop a broad range of clinical skills. The logbook consists of a general part with basic across-species skills and a species-specific part with core and advanced skills documenting also the frequency of performed clinical procedures (see 3.3.1, **Appendix**).

Clinical training in the CCVM occurs on several levels. According to the TAppV students are obliged to go through a number of externships, that may be chosen by the individual students. Those externships can be done in private practice or students can choose to do those in the individual clinics of the CCVM. The number of patients received varies from service to service and week to week as seen in private veterinary practice as well. Cases may be referred for second opinion and may be walk-in first opinion cases, also depending on the day and service. The balance between species in those externships is up to the student. Further clinical training occurs through an obligatory rotation through one of the clinics of the CCVM for 12 weeks as part of the curriculum. Furthermore, clinical training occurs through case demonstrations in the clinical semesters, during which all disciplines and species are involved. Beside the practical clinical training, clinics offer courses on different topics ("morning rounds" and afternoon courses) to learn the theoretical basics and how to apply them in the clinic. The number of patients seen by each student highly depends on the chosen clinic and seasonal fluctuations.

5.1.3 Welfare of animal used for educational and research activities

At the Faculty of Veterinary Medicine, we consistently try to implement the concept of the 3Rs rule by Russel & Burch in both research and teaching to improve the lives of animals used for scientific purposes. The concept of the 3Rs - Replacement, Reduction and Refinement - and these principles are broadly accepted at the Faculty as the framework under which research on animals should be conducted. Replace animals with other ways of gaining the required knowledge (by using computer models, tissue culture, artificial organs etc. to understand biological processes). Reduce the number of animals used to achieve the results (for example by doing more efficient experiments which use fewer animals). Refine the way animals are treated to minimize any impacts on them (aiming to cause less suffering to the animals or to improve their welfare whilst still achieving the scientific aims). The Felix Wankel Animal Welfare Research Award is usually awarded every two years by the Faculty for outstanding experimental and innovative scientific papers aiming at or resulting in the replacement or reduction of animal testing, the general fostering of the idea of animal protection, ensuring the health and the appropriate housing of laboratory animals, pets and livestock, or supporting core research for the purpose of enhancing animal protection. The Award is endowed with up to 30,000 €. Furthermore, the Faculty awards the Animal Welfare Awards provided by the Forster-Steinberg Foundation in cooperation with the University of Veterinary Medicine in Vienna every two years. These additional prizes are awarded to people or institutions who engage in excellent projects concerning animal welfare or animal husbandry and are endowed with 40,000 € (<https://forstersteinbergstiftung.at/preistrager-innen-forster-steinberg-2021/>). Furthermore, a prize is offered to outstanding research projects dealing with animal welfare concepts (80,000 € provided by each university in Vienna and Munich).



Institutions of the Faculty conducting animal experiments have formed an Ethics Committee. This committee consists of the animal caretakers, scientists performing animal experiments and the animal house management. The Ethics Committee meets on a periodical basis (at least 2x/year), where also the Animal Welfare Officer of the Faculty participates. Measures for improving breeding, housing and care as well as procedures used for killing of animals are discussed and ways to improve the welfare of animals are developed. In addition, developments and the results of animal experiments are monitored and recorded, considering the effects on the animals used.

In order to look for ways to improve the lives and reduce the impacts of research, medical training with animals (especially dogs, cats, mice, rats) has long been carried out as standard and very successfully in all facilities of the Faculty that perform animal experiments. In summary, medical training refers to the specific preparation of animals for all actions and experiences they may experience in connection with veterinary or care procedures, as well as the conscious application of the laws of classical and operant conditioning during such procedures with the aim of minimizing and avoiding stress.

In addition, the housing facilities are based on the latest scientific findings on handling and enrichment. For example, in mouse husbandry, animals are handled by tunnel rather than being caught out of the cage by the tail.

The scientists and animal caretakers of the Faculty who are involved in animal experiments regularly attend advanced training events such as the advanced training series offered by the LMU for prospective veterinary specialists in the field of laboratory animal science and animal welfare as well as the events of the Munich Animal Caretaker Advanced Training.

5.1.4 Obtaining, storing, and destruction of cadavers and material of animal origin used in practical training in anatomy and pathology

Anatomy

Cadavers for anatomical training are either obtained from veterinary clinics or practitioners. Parts of carcasses, such as feet of forelimbs and hindlimbs of cattle and horses as well as horse heads, are collected from various slaughterhouses. The cadavers of small ruminants and pigs are collected from institutes/clinics of the Faculty (Clinic of Ruminants, Chair of Molecular Animal Breeding and Biotechnology). The chickens used are purchased from a private chicken farm. All carcasses and parts thereof are stored in an unfixed state at -20 °C in freezers until needed. After training, cadavers, organs and material of animal origin are stored in separate containers in the refrigerator room and are disposed of by the Institute of Veterinary Pathology once a week.

Specimens for histology courses are either retrieved from abattoirs or from recently euthanatized animals from institutes or clinics of the Faculty.

Pathology

Cadavers used for practical training in pathology are either obtained from animals submitted for diagnostic purposes or for disposal. This includes animals from the Faculty's clinics or from external senders (veterinary offices, veterinary clinics, practitioners, owners etc.). Cadavers arrive either fresh, cooled or frozen and are stored within three different refrigerator rooms within the Institute for Veterinary Pathology. Outside the opening times, a cold storage room at the gate to the City Campus can be used 24/7 for small animals or postal submissions. Single fresh organs are obtained from Munich's slaughterhouse on four days a week.

After necropsy, organs or tissue specimens of interest are either stored cooled at 2 to 5 °C or frozen at -10 °C for upcoming student's teaching, for forensic issues and/or fixed in 4% buffered formalin. Formalin-fixed organs get rinsed several times with water before students get into contact with the specimens.



Cadavers, organs and material of animal origin, which were not in contact with any chemicals, are stored in containers which are in separate refrigerator rooms until the local rendering plant is collecting them twice a week. Organs for further laboratory tests are stored frozen at -10 °C. Fixed organs of further research or teaching purposes are stored in laminated bags in special archives.

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

Species	2021	2020	2019	Mean
Cattle	81	730	732	514
Small ruminants	21	95	97	71
Pigs	33	88	136	86
Companion animals	629	420	550	533
Equine	3	3	4	3
Poultry & rabbits	18	180	286	161
Aquatic animals	5	25	54	28
Exotic pets	31	10	145	62
Others (Camelidae)	10	8	7	8
Others (Wild birds)	52	0	340	131

Table 5.1.2 Healthy live animals used for pre-clinical training (animal handling, physiology, animal production, propaedeutics, ...)

Species	2021	2020	2019	Mean
Cattle	24	323	337	228
Small ruminants	100	100	122	107
Pigs	849	1011	952	937
Companion animals	24	0	30	18
Equine	3	3	3	3
Poultry & rabbits	16	0	271	96
Exotic pets	0	0	56	19
Others (Camelidae)	0	13	13	9
Others (rodents)	200	260	250	237
Others (pigeons)	0	0	128	43
Others (wild birds)	2	0	0	1

Table 5.1.3 Number of patients seen intramurally (in the VTH)

Species	2021	2020	2019	Mean
Cattle	756	759	754	756
Small ruminants	337	296	373	335
Pigs	169	38	64	90
Companion animals	12,018	11,318	11,294	11,543
Equine	0	779	577	452
Poultry & rabbits	378	286	218	294
Exotic pets	1,413	1,675	1,907	1,665
Others (camelids)	170	99	0	90
Others (wild birds)	529	813	1,117	820



Table 5.1.4 Number of patients seen extramurally (in the ambulatory clinics)

Species	2021	2020	2019	Mean
Cattle	11,210	10,388	10,236	10,611
Small ruminants	489	694	748	644
Pigs	2	3	3	3
Companion animals	81	42	21	48
Equine	10	5	4	6
Poultry & rabbits	5	14	8	9
Others (camelids)	0	0	219	73

Table 5.1.5 Percentage (%) of first opinion patients used for clinical training (both in VTH and ambulatory clinics, i.e. tables 5.1.3 & 5.1.4)

Species	2021	2020	2019	Mean
Cattle	90	90	90	90
Small ruminants	90	90	90	90
Pigs	100	37	67	68
Companion animals	35	35	34	35
Equine	100	40	40	60
Poultry & rabbits	90	90	81	87
Exotic pets	90	90	80	87
Others (camelids)	90	90	90	90
Others (wild birds)	100	100	100	100

Table 5.1.6 Cadavers used in necropsy

Species	2021	2020	2019	Mean
Cattle	15	14	15	15
Small ruminants	16	24	19	20
Pigs	106	118	150	125
Companion animals	243	325	324	297
Equine	41	48	37	42
Poultry & rabbits	60	140	161	120
Exotic pets	0	123	135	86
Others (Rodents)	73	24	145	81
Others (Camelids)	17	20	4	14
Others (Zoo animals)	123	112	116	117
Others (Wild animals)	72	99	363	178

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

Species	2021	2020	2019	Mean
Cattle	92	118	100	103
Small ruminants	30	37	28	32
Pigs	55	73	71	66
Poultry	0	30	64	31
Rabbits	0	0	0	0
Aquatic animals	1	1	4	2
Others (Camelidae)	0	0	1	0



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

Species	2021	2020	2019	Mean
Ruminant's slaughterhouses	0	2	4	2
Pig's slaughterhouses	0	0	32	11
Poultry slaughterhouses	0	12	4	5
Relates premises	0	0	0	0

5.1.5 Decisional process and communication

Patient owners are notified about the possible inclusion of their animal into training of students and into clinical studies. LMU teaching hospitals and institutes, likewise, are responsible for the animals owned by the Faculty, for acquisition of patients and material for preclinical and clinical training and for compliance to guidelines for good veterinary practice, animal welfare and safety. Kind and number of patients and material provided by the Faculty are recorded by each unit the way data have been acquired for SER. Exposure to patients and materials at EPT, on the other hand, is assessed via questionnaires. All these data are reported to the Office of Student Affairs. Changes and shortcomings are analysed and discussed at regular meetings of the executive committee of the CCVM and at the Dean's office to ensure sufficient training, cases and patient material for undergraduate and postgraduate education and research projects. Faculty members are notified if shortcomings arise to guarantee and improve practical training of students. Likewise, EPT supervisors will receive appraisal results from questionnaires to identify shortcomings and to be able to improve the EPT.

5.2 External sites for practical training

Veitshof teaching farm (Freising)

At the Veitshof teaching farm (Technical University Munich) rectal palpation (gynaecology) and pregnancy testing (with ultrasound) can be trained in 60 dairy cows.

Commercial dairy farms

The Ambulatory Clinic (Clinic for Ruminants) holds the role of the farm veterinarian for about 60 commercial dairy farms providing individual animal care and herd health services. In addition, there is a cooperation with another veterinary practice.

Commercial small ruminant farms

The Ambulatory Service (Clinic for Ruminants) regularly visits 35 commercial sheep and goat farms for practical training of pregnancy testing, castration and blood sampling.

Thalhausen teaching farm

At the Thalhausen teaching farm castration of suckling piglets and castration of anatomically incorrect male piglets (cryptorchism, hernia inguinalis/scrotalis) takes place as well as injection of iron in suckling piglets for anaemia prevention.

Other commercial farms

In other commercial farms castration of suckling piglets, castration of anatomically incorrect male piglets, clinical examination of pigs and treatment of sick pigs, pregnancy check-up via ultrasound, evaluation of feed, herd care, catching and handling of pigs and sample collection is practiced.

Students may come along and help with research projects conducted on commercial farms, depending on the current research projects (e.g. poultry, laying hen or rabbit farms). This is a voluntary option for all semesters. Dependent on the research project and the farm the following



practical training is possible: catching and handling animals, adspectory and palpitory assessment of the health status and measurement of the microclimate.

*Main and County Stud Schwaiganger (Bavarian State Estates) – Haupt- und Landgestüt
Schwaiganger (Bayerische Staatsgüter)*

At the Main and County Stud Schwaiganger horse exterieur evaluation practice and animal breeding courses take place. The stud farm covers a total of 860 ha. Of this, around 420 hectares are agricultural land, and 330 hectares are forest. Schwaiganger is located about 70 km south of Munich. Currently, 220 horses of the three breeds German Sport Horse, Southern German Cold Blood, Haflinger and Noble Blood Haflinger are held here.

5.3 Clinical Skills

5.3.1 Nursing skills

Preclinically students start with an agricultural training, which can be accomplished extramurally, but nearly all of the students do it at the Livestock Center Oberschleißheim where handling and care of production animals are taught. Propaedeutics serve as principal training for the appropriate handling of different animal species. Additionally, to EPTs, students can improve their nursing skills during clinical training with the help of experienced animal keepers and veterinarians. Students are especially involved in monitoring and caring for hospitalised animals.

5.3.2 Hands-on training

Starting with propaedeutics, groups of 20 students are introduced to handling of different animal species using pet animals of the students as well as dummies. Knowledge can be deepened via propaedeutics course blocks offered by the skills lab in groups of max. four students. During clinical training offered by the Faculty group sizes range from 1 to 4 students (see also 3.1.5 for details). During EPTs group sizes depend on the provider, as clinics can provide more practical positions for students compared to veterinary practices.

Starting with the first day of clinical training, students get instructions in terms of biosafety and security in the different clinics. Students are fully involved in all intra- and extramural clinical procedures, starting from anamnesis and general examination, which is in most of the cases first performed by the students, exercise standard procedures such as obtaining blood/skin/different body fluid samples, skin biopsy collection, staining and evaluating cytology samples, placing intravenous catheters etc. under close supervision of experienced veterinarians and can assist in advanced clinical procedures such as reproductive medicine, diagnostic imaging, anaesthesia, surgery, intensive care and emergency cases. Furthermore, written documentation and therapeutic procedures are taught to the students. Additionally, in extramural ambulatory service herd health examinations are taught to the students. During the pathology block, groups of up to 5 students accomplish necropsies, and groups of up to 8 students examine organs obtained from the slaughterhouse. For further insights, students are welcome in daily case discussions, and can deepen their knowledge and skills during elective practical training.

To guarantee acquisition of Day-One Competencies, students are advised to fill in their logbooks, and call the veterinary staff's attention to personal gaps of skills.

5.3.3 Theoretical work up of clinical cases

In preparation to clinical practical training, many seminars are structured in a problem-oriented way to train students in terms of clinical routine. During clinical training, a daily overview about clinical appointments and patients are given during morning rounds comprising patient rounds and various topics. In those rounds in depth discussions about the differential diagnoses,



their pathogenesis, clinical signs, diagnostic work-up and treatment are taking place. Students are encouraged to present personally cared hospitalized patients to create the incentive to dive deeply into a clinical case. Between different appointments with patients, students further have time to read up patient's history, background knowledge and clinicians are always open to answer questions.

5.4 Medical records

All clinics as well as the Chair for Animal Nutrition and Dietetics use a common computer programme called *VETERA* for administration of patient data. All information concerning the owner, signalment of the patient, examination, treatments, and results of additional investigations are documented. Data can be searched for scientific purposes according to patient number, owner, disease and laboratory results. When working in the clinics, students have access to the system and get instructed how to use the software, and how to document and interpret specific data.

The Institute for Veterinary Pathology uses a 4D-database. All information about animals, owners and the results of all investigations are documented, and all data can be used for archive searching and scientific purposes. When students choose the Institute for Veterinary Pathology as elective practical training, they can use the software to get insight into expert reports.

The Institute of Parasitology uses the Vianova Programme/MIPS Eltville as well as Office, Adobe PDF Reader and Zoom. Other diagnostic services also use access database and Adobe PDF Reader.

5.5 Comments on Standard 5

The number of animals and material of animal origin is sufficient for practical training. The variety of animals is still increasing as more and more exotic species are also kept as pets in Germany. During the last academic year, the Clinic for Equines moved to the new site in Oberschleißheim and was subsequently closed for equine patients. The new site offers a brand-new equine clinic and is now opened to welcome patients under highly modern conditions.

Due to distance between the Clinic for Ruminants and the City Campus many ruminants are currently not sent to the Institute for Veterinary Pathology. This will be resolved as soon as the Institute will move to Oberschleißheim allowing also private/commercial owners an easier transportation in terms of wider roads and closer connection to highways.

During lockdown situation in Coronavirus pandemics some clinics were only allowed to offer an emergency service, therefore number of patients can differ compared to regular clinical operation. Regarding clinical teaching, numerous online learning resources (seminars, video tutorials, lectures etc.) were created and are always open to students on the e-learning platform moodle.

5.6 Suggestions for improvement on Standard 5

Reviews of the students' logbooks should be performed to identify frequently missing basic practical procedures in order to further guarantee the acquisition of basic clinical practical skills. A formal collaboration with the Thalhausen teaching farm of the Technical University of Munich is highly encouraged.

To increase necropsy cases, local practitioners should get more information about the work of the Institute for Veterinary Pathology and easy ways to send carcasses. To address this, the Institute's homepage will be updated and more personal contact to practitioners will be cultivated. Active advertisement has already been started.



6. Learning resources

6.1 Factual information

6.1.1 General strategy on learning resources

The aim of the Faculty is to provide students an easy access to teaching materials at all times and to cover the different learning types in the best possible way.

This includes our Faculty library with relevant literature, but also our eLearning platform moodle. While students have unlimited access to books, eBooks, journals, papers and other digital resources via the library, moodle provides eLearning materials in many different forms: Lecture notes, teaching videos, lecture recordings, podcasts, eLearning programs, quizzes, teaching modules, case studies, virtual anatomical and histological collections, etc. This is to ensure that all students can learn and review material at any time and as often as they wish.

Currently, every year, a 2-day continuing education seminar is given to all scientific staff of the CCVM, covering areas such as electronic data base searches, how to review papers, how to write papers, how to give presentations, how to evaluate the literature etc.

Students and staff can also attend tutorials offered by the University library, available online on the LMU website, and specific seminars provided by the LMU for improving skills in online teaching. The Faculty has also developed an eLearning strategy and supports teaching staff in all matters related to e-learning.

6.1.2 Access and use of learning resources

At the beginning of the study, students immediately get access to the eLearning platform of the Veterinary Faculty called moodle. There is a special course in place, where different learning resources and access to the online and offline learning resources are explained to the new students via tutorial videos. These videos are also accessible for all the other students and academic staff. Furthermore, the University Library (UB) offers several tutorials on the webpage covering all concerns regarding e-media and hardcopies offered by the libraries of the LMU.

Students: Right at the beginning of their studies, students are given access to moodle and a general introduction. The lecturers actively draw attention to the available services in their courses and encourage the students to actively use them. They are also introduced to the library and its offerings in an informational video. There is a direct link to the homepage of the University library where all available offers are explained in detail in several videos and tutorials.

Staff: There is a moodle course for lecturers, where instructions, ideas, inspirations and suggestions are available and regularly updated. If needed, there is a special moodle support that provides tutorials and trainings, helps with specific questions and problems and supports with the implementation of eLearning projects. Projects are presented and discussed at regular faculty meetings.

6.1.3 Decisional process on learning resources

The moodle platform has been introduced for the entire LMU and is therefore also used for veterinary medicine. In case of special questions, the higher-level team of the LMU's eUniversity is also available to the Faculty's moodle managers at any time and can also realize larger and more complicated projects.

The resources of the library include all important standard resources of veterinary literature and are continuously updated. Due to the annual budget available, new books can be purchased, and licenses for e.g. eBooks or learning programmes can be acquired. Special requests can be made to the library by students and lecturers and the management then decides together with the Faculty whether the medium will be purchased.



6.2 Libraries, IT-Unit & E-Learning

6.2.1 Main library

The University Library Munich (*Universitätsbibliothek München, UB*) is open to students of all faculties. It consists of one central library and 14 peripheral specialised libraries, one of which is the Library of the Veterinary Faculty.

The LMU has a central library as well as libraries in many of the faculties. Overall, there are over 130 staff employed at the various libraries at LMU Munich. Ninety of those have a university degree, the rest either no qualification or a completed education as a technical assistant for media and information services. In the faculty library there are two positions, one employee with a master's degree and the other employee with a bachelor's degree both of which are working half-time. In addition, there is one person working full time that is a technical assistant.

University Library Munich

Main reading hall and computer rooms

Mon-Fri 8:00 am to 10:00 am

Sat-Sun 9:00 am to 08:00 pm

Lending area

Mon-Fri 9:00 am to 08:00 pm

Library of the Veterinary Faculty

Mon-Fri 9:00 am to 8:00 pm

The annual budget for all libraries at the LMU is 7,037,584 € and 48,864 € for the library at the Faculty of Veterinary Medicine.

Overall, all libraries have a space of 27,264 m² (only the publicly accessible space, not administrative offices), the Faculty of Veterinary Medicine has 206 m².

Overall, the LMU libraries (main library and all faculties) provide over 3,500 places, 355 of which are equipped with a computer. The Faculty of Veterinary Medicine has 20 spaces to work, and 5 places with a computer. There are 11 electrical outlets to enable working at laptops brought into the veterinary library, in other branches and the Central library there are also numerous electrical outlets available.

Available software resources comprise:

- PubMed
- Medline
- Online Contents Veterinary Medicine
- CAB Abstracts Archive (1910 - 1989)
- Web of Science Core Collection with the modules Science Citation Index Expanded and Conference Proceedings Citation Index Science
- Journal Citation Reports

6.2.2 Subsidiary libraries

In addition to the University Library Munich, students have access to the Bavarian State Library Munich (Bayerische Staatsbibliothek München, BSB) and to the Library of the Technical University of Munich (Bibliothek der Technischen Universität München, TUB). Both are within walking distance from the city campus.



Bavarian State Library Munich

Main reading hall

Mon-Fri 8:00 am to 03:30 pm and
04:00 pm to 10:00 pm

Lending area

Mon-Fri 10:00 am to 07:00 pm

Library of the Technical University of Munich

Mon-Fri 8:00 am to 10:00 pm

Sat-Sun 9:00 am to 10:00 pm

Fourteen chairs and clinics of the Faculty have their own collections of specialized textbooks and journals. These subsidiary libraries are either opened during the general opening times of the institutions or by appointment with the responsible personnel. The availabilities of journals of the subsidiary libraries can be searched through the online catalogue of the University Library Munich. Especially during the clinical semesters, students use these libraries to work on cases or to prepare for specific seminars.

6.2.3 IT facilities and eLearning platform

IT facilities

IT-Servicedesk LMU

The LMU runs a central IT-Service desk offering software like Microsoft Office 365 and services like Zoom, Rocket Chat and moodle for students and staff. They provide general support for students to use WiFi, have computer access and use web services via a single sign-on access system. The central IT service desk supports the Faculty's IT department by handling general questions from students and staff.

IT department of the Faculty (Rechnerbetriebsgruppe, IT-Abteilung)

The IT department of the Faculty forms the interface between the basic services provided by the LMU and the supercomputer centre of the Leibniz-Rechenzentrum der Bayerischen Akademie der Wissenschaften (LRZ). The computer operations group connects the Faculty's computer and service users (students and staff) to a wide range of services via a single sign-on and VPN (virtual private network) infrastructure. Depending on the purpose, these are operated in the Faculty's own data centre or directly connected to the LRZ's special and supercomputing services. In the Faculty's own data centre, there are high-capacity storage systems and virtual servers for the special IT requirements in the laboratories and clinics of the Faculty of Veterinary Medicine. Employees can use an electronic ticket system to make inquiries about the Faculty's IT services. The design of the network expansion and the procurement of hardware and software for the Faculty are also controlled from here.

Leibniz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities (LRZ) (Leibniz-Rechenzentrum der Bayerischen Akademie der Wissenschaften)

LRZ supports ground-breaking research and education throughout a wide range of scientific disciplines by offering highly available, secure and energy-efficient services based on cutting edge IT technology. LRZ supports IT services in numerous ways, ranging from communications infrastructure (such as e-mail and web services) to eLearning platforms, from enablement of breakthrough scientific findings through computational simulations to archiving of result datasets. The Munich Universities, LMU and TUM, both have access to these services directly from LRZ in its role as their IT service provider. Other Bavarian universities also have access to LRZ's services. The LRZ has been operating world-class supercomputers for decades.



eLearning platforms and resources

In 2017 the Faculty implemented the eLearning platform “moodle” provided by the LMU. Students can register to their different subjects and courses and have then access to all eLearning material concerning this subject/course. It is possible to work in virtual teams, to implement virtual classrooms, to provide tutorial videos and to perform virtual microscopy. moodle also offers various possibilities for communication between students and teaching staff like newsletter pages, forums, chatrooms or e-mail functions. Furthermore, there is a calendar function to keep track of all individually activated lectures or seminars.

In 2018, a self-learning platform was developed in the IT department of the Faculty together with an external company, which enables students to check their level of performance - the Progress Test.

Since 2019, exams and courses can be held using an Apple iPad-based infrastructure. There are currently 175 iPads available for lecturers, which can be adapted to the respective needs via mobile device management.

The Faculty has its own eLearning video production facility called Rapid Mooc Studio. This easy-to-use platform allows lecturers to produce high quality learning videos without prior technical knowledge.

6.2.4 Access to electronic learning resources

The electronic teaching and learning resources can be accessed from any electronic device inside and outside the LMU. All services can be accessed with the same ID via the single sign-on infrastructure provided. A separate VPN infrastructure for students and a separate VPN infrastructure for employees makes it possible to provide services and access for specific target groups. EDUROAM is available at all LMU WiFi access points and simplifies access for students and employees to eLearning resources in libraries and lecture halls.

6.3 Learning resources

ePeriodicals

Students have access to a large list of e-publications:

- Medline (includes > 28 million citations from more than 5,200 scholarly journals published around the world)
- PubMed (includes all Medline journals and non-medline journals)
- Online Contents Veterinary Medicine
- CAB Abstracts Archive (CAB Abstracts Archive is a fully searchable database created from 600 printed volumes. Containing over 1.8 million records on agriculture, veterinary science, nutrition and the environment from 1910 - 1989)
- Web of Science Core Collection (contains over 21,100 peer-reviewed, high-quality scholarly journals published worldwide (including Open Access journals) in over 250 sciences, social sciences, and arts & humanities disciplines. Conference proceedings and book data are also available)
- Journal Citation Reports (provides transparent, publisher-neutral data and statistics such as a rich array of citation metrics, including the Journal Impact Factor™ (JIF), alongside descriptive data about a journal's open access content and contributing

eBooks

Furthermore, students have access to a large list of eBooks from

- Cambridge Core
- Columbia University Press
- Elsevier eLibrary
- Karger eBooks



- Science direct eBooks
- Springer Medicine eBooks
- Thieme eBooks
- University Press Scholarship Online
- Wiley Online library

The library offers a number of courses for students and faculty covering literature searches, and the use of Endnote and Citavi 6. eTutorials about those topics exist as well.

Learning resources available to students

Besides books, eBooks, publications students have access to the e-learning platform moodle. It provides not only eLearning material, but also important announcement for daily organization, assessment information and news, and allows students and teachers to come into contact via forums and e-mails. During the Coronavirus pandemic eLearning courses, quizzes, teaching modules, case studies, virtual anatomical and histological collections and podcasts were massively increased in a short period of time. This led to a broad range of offered eLearning sources and is highly encouraged by the Faculty management and the students. Surveys and evaluation of the offerings are periodically performed to further improve the content in accordance with the needs of staff and students.

Skills Lab

The Skills Lab is offering course blocks, compact classes, elective courses and additional events focusing on Day-One Competences. Students can either work self-study based or by help of tutors. The procedures are illustrated by means of written instructions, photos or videos.

We have seven different course blocks for propaedeutics, reproductive medicine, surgery, x-ray and laboratory work, starting from the 2nd semester. Additionally, the skills lab is offering six compact classes (in 2-hour courses) for students in their practical year (small animal surgery, small animal internal medicine, horses, ruminants, swine, bird/reptile) with particular focus on emergency care. Furthermore, the skills lab is offering five elective courses (e.g. communication skills, emergency care) with duration ranging from 14 to 28 hours. Equipment comprises laboratory instruments, microscopes, dummies, models of various species, surgical instruments, dressing and different medical tools.

All courses can be selected via Coremato or moodle. Elective courses can be chosen once per semester. Course blocks and compact classes can be chosen weekly. The Skills Lab manufactures new models in its own workshop and can thus implement individual solutions. Our models and courses are regularly evaluated and revised based on the results.

6.4 Comments on Standard 6

The LMU offers foundations for online teaching projects. Application forms of staff can be submitted twice a year.

IT security is constantly under improvement to address all current safety-relevant developments.

The Faculty's subsidiary library and institute-/clinic-specific libraries will be moved to the new Campus Oberschleißheim as soon as all institutions are relocated.

6.5 Suggestions for improvement on Standard 6

The LMU library offers a booking system for seats, and it is planned to introduce this system also for the veterinary library at the campus in Oberschleißheim.

Since students have expressed the desire to have rooms for group work, lecture halls will now be open for students.



Hybrid teaching will continue after the Coronavirus pandemic, including recording of lectures so that it can be accessed online afterwards. Additionally, general compulsory courses are supplemented by compulsory online lectures.

To guarantee that students are involved in a variety of faculty processes, more student assistants are now being hired.



7. Student admission, progression and welfare

7.1 Advertisement of regulations of the student "life circle"

Information on educational programmes, learning outcomes, admission procedures and requirements for national and foreign students, progression and certification, tuition fees, academic calendar and collaborations with other establishments can be found on Faculty's homepage.

To address prospective students directly, the Faculty participates in the annual LMU campus day www.lmu.de/de/studium/beratung-und-orientierung/lmu-erleben/campustage.html and offers a special LMUni afternoon just for veterinary medicine. This is advertised on the website and is aimed at students who are particularly interested in veterinary medicine. A lecturer from the Student Council promotes the event in advance and accompanies interested prospected students by answering questions.

Throughout the year, the Student Affairs is available by phone and e-mail to answer questions regarding applications, admissions, studies and exams.

General information on the student's "life circle" with links to other institutions like *Hochschulstart* or the LMU general administrative facilities can be found summarized at the Faculty's website: www.vetmed.uni-muenchen.de/studium/index.html. Direct links are provided within the following:

Educational programmes

The educational programme is regulated by the examinations and study regulation which can be found on the website, as well as a description of our programmes: www.vetmed.uni-muenchen.de/studium/info_studieninteressenten/fach_allgemein/index.html and www.vetmed.uni-muenchen.de/studium/gesetze/index.html

The Faculty and the LMU student office (*Studentenkanzlei*) also offer videos on study programmes in general, and also provide a video with a tour around the campus:

cast.itunes.uni-muenchen.de/clips/u3YdUdUnI0/vod/online.html

cast.itunes.uni-muenchen.de/clips/cjhLgUTuhF/vod/online.html

Programme learning outcomes

Programme learning outcomes are advertised on the e-learning platform moodle as well as on most clinic websites.

Admission procedures and requirements for national and foreign students

Detailed information can be found on the *Hochschulstart* website: hochschulstart.de as well as on the Faculty's website:

www.vetmed.uni-muenchen.de/studium/info_studieninteressenten/index.html

www.vetmed.uni-muenchen.de/studium/international/index.html

www.lmu.de/en/study/degree-students/applications-for-admission/guidelines-and-faqs/guide-to-applying-to-study-medical-subjects/index.html

The Faculty and the student office also offer videos with detailed description on their websites:

cast.itunes.uni-muenchen.de/clips/YvYyYwceKQ/vod/online.html

cast.itunes.uni-muenchen.de/clips/BKEw7HHjML/vod/online.html

Progression and certification

On the Faculty's website, there is a separate section only referring to exams. Herein, students can find all relevant information with links. www.vetmed.uni-muenchen.de/studium/pruefungen/index.html



Tuition fees

The Bavarian State Parliament (*Bayerischer Landtag*) decided in March 2013 to abolish tuition fees in general. In return the missing funds are now financed through the annual household budget of the Bavarian State.

Academic calendar

Details on the academic calendar are provided on the LMU website: www.uni-muenchen.de/studium/beratung/studienbeginn/vorlesungszeiten/index.html.

Collaboration with other establishments:

Important collaborations with other establishments include ERASMUS, Swiss-European Mobility Programme (SEMP), external lecturers, "Competence Center for E-Learning, Didactics and Training Research in Veterinary Medicine" (KELDAT), VETSkills Lab challenge, European University Alliance for Global Health (EGLOH), and International Veterinary Students' Association (IVSA). Information on these collaborations is advertised via the Faculty's website, during lectures and by the Dean's Office and the Students Council via e-mail or on request.

7.2 Number of students

Table 7.2.1 Number of new veterinary students admitted by the Establishment

Type of student	2021	2020	2019	Mean
Standard students	317	319	300	312
Full fee students	0	0	0	0
Total	317	319	300	312

Table 7.2.2 Number of veterinary undergraduate students registered at the Establishment

Year of programme	2021	2020	2019	Mean
First year	318	319	300	312
Second year	283	273	268	275
Third year	265	259	262	262
Fourth year	255	254	241	250
Fifth year	247	235	246	243
Sixth year	232	243	231	235
Total	1,600	1,583	1,548	1,577

Table 7.2.3 Number of veterinary students graduating annually

Type of student	2021	2020	2019	Mean
Standard students	209	252	223	228
Full fee students	0	0	0	0
Total	209	252	223	228

Table 7.2.4 Average duration of veterinary studies

Duration	% of students who graduated in 2021
+0**	80
+1 year	15
+2 years	3
+ 3 years or more	2

** The total duration of the studies matches the minimum number of years of the programme (e.g. 5 or 6 years)



Table 7.2.5 Number of postgraduate students registered at the Establishment

Programmes	2021	2020	2019	Mean
Interns	43	34	34	37
Residents	32	34	31	32
Graduate students	401	390	330	374
Others (German specialist veterinarian; Fachtierarzt/Zusatzbezeichnung)	23	26	25	25

7.3 Student admission

7.3.1 Admission procedures for standard students

Hochschulstart is a German-wide service platform of the Foundation for University Admissions (SfH). It coordinates the applications for undergraduate degree programmes including the central allocation of nationwide admissions restricted study places in the subjects of human medicine, veterinary medicine, dentistry and pharmacy. The central coordination of admission is necessary to ensure fairness throughout the country, since the number of applications exceeds the number of study places widely.

The Dialogue-oriented service procedures (*Dialogorientierte Serviceverfahren*, DoSV) runs in three phases.

1. **Application phase:** If students wish to apply for a degree programme, they must register on the DoSV application portal. Students can apply for several universities where the study programme is offered with subsequent prioritisation of the universities.
2. **Coordination phase:** Universities first determine whether the applicant can enter the admissions programme. Based on different criteria, universities rank all applicants for each degree programme. Initially, a small number of study places are allocated to special target groups (e. g. second degree applicants) via advance quotas. The remaining study places are allocated based on three main quotas: the best High School Graduation (*Abitur*) quota, the Additional Aptitude Quota (*Zusätzliche Eignungsquote*, ZEQ) and the individual selection procedure of the universities (*Auswahlverfahren der Hochschulen*, AdH). All applicants automatically take part in all three quotas without further action needed. These rankings are then transmitted to the DoSV and serve as a basis for the distribution of admission offers for the respective university. *Hochschulstart* generates rankings for the study programmes with nationwide numerus clausus itself. Since the universities and *Hochschulstart* complete their rankings at different times and forward them at different dates, the coordination phase takes several weeks.
3. **Phase of coordinated advancement:** The DoSV study places remaining vacant are allocated to applicants who have not yet been able to obtain admission. If the existing rankings from the coordination phase do not contain any further applicants and places are still available, these will be raffled off to applicants who have applied for the remaining places during the coordinated secondary selection. However, it is not possible to reapply for other degree programmes with nationwide admission restrictions during this phase. This means that only applicants who were rejected for all active applications submitted during the coordination phase can take part in the coordinated move-up. At the end of the coordinated advancing phase, the allocation of study places for all applicants ends.

Further detailed information can be found on the *Hochschulstart* website: hochschulstart.de.



Most foreign applicants are treated the same as German applicants. This equality (in terms of admission law) applies to:

- All foreign applicants who have gained a German higher education entrance qualification or have already completed a degree programme in Germany, which entitles them to take up the desired degree programme (*Bildungsinländer*)
- Nationals of a member state of the European Union (EU)
- Nationals of contracting states of the Agreement on the European Economic Area (EEA) that are not members of the EU (i. e. Iceland, Liechtenstein, and Norway)
- Other family members (within the meaning of Art. 10 of Regulation (EEC) No. 1612/68) of nationals of another member state of the EU or of contracting states to the Agreement on the European Economic Area who are resident in the Federal Republic of Germany, provided that these nationals are employed in the Federal Republic of Germany.

Foreign applicants, who do not meet the criteria above, must apply directly to the University and not via *Hochschulstart*. All administrative issues are handled by the International Office of the LMU which also provides information on the admission requirements. This also applies to foreign applicants who have acquired a higher education entrance qualification outside the Federal Republic of Germany or have completed a degree in the Federal Republic of Germany and are now pursuing a second-degree course at a German university.

7.3.2 Admission procedures for full fee students

Due to legislative regulations, there are only standard students.

7.3.3 Adaption of the number of admitted students to the available educational resources

The number of admitted students is calculated by the so-called capacity calculation (Kapazitätsrechnung): the available hours of teaching per year, based on the staff of the Faculty (Lehrkapazität), is divided by the so-called CNW factor (Curricularnormwert), which is calculated on the basis of available facilities. For each course the number of seats in lecture halls and the number of repetitions is assembled. The final teaching capacity is therefore adjusted by staff and teaching facilities. By German law, this must be calculated annually in February so that the number of study places is set for the admission in September. The number of diseased animals or material of animal origin has never been a limiting factor and welfare requirements are constantly adjusted to the number of students.

7.3.4 Prospective number of new students

Since the facilities and the number of staff have not changed substantially in the last ten years, the admitted student numbers are stable around 300 students per year. This will not change in the near future. The new buildings in Oberschleißheim are all planned for a prospective number of 300 students per year.

7.4 Applicants with disabilities

Applicants with chronic illnesses and disabilities are already considered during the application and admission process via the so-called special applications. There are two different special application procedures within the allocation of study places for degree programmes with nationwide admission restrictions.



Application for disadvantage compensation to improve the average grade

The average degree at school (or the corresponding number of points) is an important selection criterion in the allocation of study places. With this special application, circumstances that have prohibited applicants from achieving a better average school degree are compensated. If such circumstances and their impacts can be proven, the application will be considered for the admission process with an adjusted school degree.

Hardship application

With this special application procedure, students are admitted immediately to the degree programme. For veterinary medicine, up to two percent of the study places are reserved for cases of exceptional hardship. A case of exceptional hardship occurs by definition, if special personal reasons make immediate admission to the degree programme necessary, i. e. if a delay in the start of the degree programme, is unreasonable. Further information: hochschulstart.de/fileadmin/media/epaper/hilfe21-22/hilfe_zur_bewerbung.pdf.

Accommodation of students with disabilities in the programme

In general, students with disabilities can attend individual consultation hours of the Representative for Students with Disabilities and Chronic Illness of the LMU or the Counseling Centre. The Faculty also takes different actions in order to support students with disabilities or chronic illness to compensate for their disadvantages depending on their individual situation, e.g. adjustments of exam procedures (in consultation with the examination board or the staff of the examination office), time allowances for time-dependent examinations (up to 50%) or breaks, extension of deadlines for homework, support for written exams (e. g. laptop) or a personal assistant, a separate examination room or substitutions for practical examinations.

7.5 Student progression

Detailed progression criteria are legally regulated by the TAppV and the *Study and Examination Rules*. To be admitted to examinations, practical trainings or to proceed to the next term, the relevant admission requirements must be met. Depending on the subject, these include successful completion of courses, certificates, internships or previous exams. Whether the progression criteria are met is verified by the Examination Department and by the Office for Student Affairs.

All requirements are communicated to students via meetings, e-mails and the study guide. Exceptions can be requested from the Dean of Student Affairs for certain reasons (e. g. illness, pregnancy, parental leave etc.) and approved on an individual basis.

Students who are not performing adequately during their studies can be supported in various ways. Students can discuss problems and ask the Office for Student Affairs and the Office of the University Registrar for help at any time. In addition, the chairman of the examination board can always provide information on all matters concerning examinations. In regular consultation hours, students can ask their questions and address problems individually or in groups.

For general questions about studying and advice on scholarships and student loans, the Office for Student Affairs and the LMU Student Affairs offer a comprehensive service.

For questions about physical and mental health, LMU has set up a wide variety of offices with trained staff. Among others, this service is aimed at pregnant women and/or students on parental leave, refugees, students with disabilities and students with mental health problems or in other difficult life situations. All contact addresses are centrally located in the Office for Student Affairs and can be found on the Faculty's homepage.



If students are unable to study due to physical or mental health problems, they can take a break from their studies by taking a whole semester off. This is also possible during pregnancy and parental leave.

The German Progress Test in Veterinary Medicine was first introduced in our Faculty in 2013 and is offered annually. The test is voluntary, results are not graded and participants can neither pass nor fail. The results provide information on the student's learning status and progress throughout the years. The Centre of Competence for eLearning, Didactic and Education Research in Veterinary Medicine (KELDAT) initiated the idea of the German Progress Test in Veterinary Medicine and defined the blueprint of the exam:

Table 7.5.1 Blueprint of the German Progress Test in Veterinary Medicine

Block	Subjects	Items
Basic Subjects	Physics, chemistry, zoology, plant biology, statistics	20
Basic Sciences	Anatomy, histology/embryology, physiology, biochemistry, pharmacology/toxicology, virology, microbiology, parasitology, immunology, epidemiology	40
Clinical Sciences	Pathology, internal medicine, surgery/anaesthesiology, reproduction, diagnostic imaging, veterinary legislation, propaedeutics	48
Animal Production	Animal production and breeding/genetics, animal husbandry/herd health management, animal hygiene, ethology/animal welfare, nutrition	20
Food Safety and Quality	Inspection and control of food and feed, food hygiene, microbiology and technology	8

Four questions are asked on each subject, so the Progress Test contains 136 single-choice questions, which come along with four answers and the additional „don't know“-option. Each item belongs to one of the five blocks according to „Day-One Competences“ by EAEVE. The members of the KELDAT, which are most of the faculties in German speaking countries, contribute new items and review them during each preparation period.

Each participant receives an individual test report, which includes the number of correct and incorrect answers, „don't know“-options and not answered questions. The report also provides an overview on the development of these answer options, if applicable. No comparisons are made between different faculties, as the timing and the format of the tests are not equal.

Overall, more than 90% of students successfully complete their studies in veterinary medicine. The reasons for dropping out of studies vary. Students are exmatriculated if they have either not registered in time for the next semester or if they have definitively failed an examination. Less than two percent of students irrevocably fail to complete their veterinary studies. Unfortunately, other reasons for dropping out can only be traced to a limited extent. Immediately in the first semester, some students drop out, because they realize that the study of veterinary medicine does not meet their expectations. Later mainly personal reasons, such as illness, pregnancy or changed career aspirations are causes for drop out. Some students also change the university, because they were not admitted to their desired study place in the first place.

Veterinary medicine is a state-approved degree programme in Germany and is legally based on the TAppV. Therefore, it is regulated by the Federal Council. The entire application and admission processes are also regulated by an ordinance that is reviewed at regular intervals by the Federal Administrative Court.

The number of students admitted is based on the free capacity of the respective faculty, which is announced annually by the Dean of Studies. (see 7.3.2 and 7.3.4). All application and



admission criteria as well as the number of admitted students can be found on the *Hochschulstart* website: hochschulstart.de/startseite/statistik.

Through regular meetings of all German Deans of studies in veterinary medicine as well as through national interest groups of veterinarians, veterinary students and others, suggestions for improvement can be communicated to politicians and others responsible.

7.6 Exclusion of students

Students will be exmatriculated by the University for the following reasons:

1. All students must register at the University by the deadline for the next semester and pay the appropriate fee. If this is omitted, they will be exmatriculated at the end of the semester.
2. According to TAppV §17 No. 1, the studies are terminated, and a further repetition is not possible, if an final examination is not passed.
3. If the students have successfully completed their studies, they are automatically exmatriculated.

Complaints regarding exmatriculation due to unpaid semester fees is made directly to the LMU Student Office (*Studentenkanzlei*). The opportunity is given to submit a written statement within a limited time or to pay the missing fees. The complaint process in case of not passing an exam is listed under 8.2.4.

7.7 Student welfare

In Germany, school education is regulated by federal law, which is why the school curriculum can vary significantly between different Federal States of Germany. Furthermore, some students wait for several years to be admitted to the study program resulting in knowledge gaps in certain subjects. To support students with fewer knowledge at the beginning of their studies, the Faculty organises student tutorials in physics, chemistry, biochemistry and terminology. The tutors are veterinary students in higher semesters. In biochemistry, the tutorials take place once a week during the lecture period and each of the four tutors is responsible for one specific topic. In chemistry, physics and terminology there are one or two tutorials per semester, as these tutorials help preparing for written exams. With the assistance of the Inverted Classroom Team of the Faculty, video tutorials in these basic subjects are produced and available for students through the moodle platform. The tutor trainers of the training institution for teachers at LMU Munich www.profil.uni-muenchen.de/profil/index.html, train our tutors by the qualification program “TutorPlus” with topics related to learning, didactic methods and use of media etc. The tutors apply these teaching tools not only for their own tutorials, but also for mutual evaluations.

In the so-called “orientation phase”, the Student Council and the Office for Student Affairs organise information events, such as tours around the campus and around the city of Munich during the week before the beginning of the first term. The events take place in small groups accompanied by student tutors.

Munich Student Affairs

In general, the Student Affairs (*Studentenwerke*) are responsible for the economic, social, health and cultural promotion of students in Germany.

The Munich Student Affairs is a public law institution and, according to the Bavarian Higher Education Act, responsible for “[...] the economic promotion and social support of students in



state universities, in particular by setting up and operating childcare facilities, building and operating student halls of residence and catering facilities, and providing facilities in the cultural and social fields; the student services are to contribute to the promotion of international relations within the framework of their tasks."

It employs about 600 people and offers a wide range of courses and consultations for students at the universities in Munich, covering topics such as financial issues, social support, self-help groups, organisation of studies and student life. It also provides support for students with disabilities or chronic illness. Many of the Student Affairs residential complexes offer flats suitable for disabled persons. Further information can be found on the website: www.studentenwerk-muenchen.de/en.

Student Council

The Faculty's Student Council (*Fachschaft*) helps students with any kind of study related problems and facilitates communication between different groups of people at the Faculty (students, professors, other teaching staff). It is made up of students studying veterinary medicine from different semesters. Eight representatives of the Student Council are elected by the student body each year to participate in the General Student Council Convent, Faculty Council etc.

The Student Council is also a member of the *Federal Association of Veterinary Medicine Students in Germany* (bvvd e.V.) and the International Veterinary Students' Association (IVSA), to connect veterinary students between different faculties. Meetings at national and international level offer a lively exchange with students from other German faculties and from all over the world. In addition to the meetings, the Student Council, bvvd e.V., and IVSA support students in the organisation of international internships. Further information is provided on the website: www.fachschaft.vetmed.uni-muenchen.de/index.html.

LMU Conflict officers (Konfliktbeauftragte)

Students can seek help from so-called "conflict officers" (*Konfliktbeauftragte*) in any case of "[...] violation of personal rights, in particular through discriminatory behaviour on the grounds of race or ethnic origin, gender, religion or ideology, disability, age or sexual identity by members of the LMU" (see paragraph § 48a of the LMU statutes).

The conflict officers will act as mediators and moderate exchange between conflict parties. They also develop preventive strategies to avoid conflicts in advance. Further information is provided on the website

www.uni-muenchen.de/einrichtungen/orga_lmu/beauftragte/konfliktbeauftragte/index.htm

7.8 Student Suggestions

Students can use various direct and indirect methods to provide their needs, complaints, comments and suggestions to the Establishment. Students can directly get in touch with staff of the Faculty by attending consultation hours or by anonymously give written feedback via a letter box installed at the Deans' Office (see also 1.4 and 8.2.3). They can also address student representatives who are in close contact with the Dean of Student Affairs or directly contact the Dean of Student Affairs by themselves. Students can also get in touch with professors elected by students as ombudsperson or the women's representatives of the Faculty.



7.9 Comments on Standard 7

The admission of students is legally regulated and centrally controlled by *Hochschulstart*. This makes the admission process transparent, and students thus know exactly which requirements are necessary to be admitted to the study of veterinary medicine. The central regulation of admission enables an objective evaluation of the applicants throughout Germany.

A variety of institutions help students with various matters (general affairs, pregnancy, illness). The institutions work hand in hand and therefore provide an optimal framework of support.

Students can get involved in and have an impact on many processes throughout the Faculty in various ways (faculty council, feedback letter box, office hours). There is a very active and good exchange between the student body and the Dean of Student Affairs.

7.10 Suggestions for improvement on Standard 7

Due to the central admission process managed by *Hochschulstart*, the Faculty itself has little impact on chosen criteria for admitting students. A more personalised admission process could better assess the qualification of students for the study of veterinary medicine as well recognize students who would not be admitted via *Hochschulstart* due to their school degree.

The Faculty's website is currently being revised and will be relaunched in a few months with a new design. This will allow more intuitive and convenient access to any information.

To encourage and support students to give feedback, a digital feedback tool that will allow to anonymously contact any faculty member directly is currently being developed. This aims to increase the impact of students on topics such as the curriculum, teaching, practical training, and exams.

The New Campus, which is currently being built in Oberschleißheim, will make it more convenient for students with disabilities to use the facilities.

8. Student assessment

8.1 Assessment Strategies

The examinations are legally regulated in detail in Chapter 2 of the TAppV. The Faculty defines the type of examination in the Study and Examination Rules (*Prüfungsordnung*). Currently, different types of examinations are used: written, single or multiple choice, oral, Objective Structured Clinical Examinations (OSCE), or a combination of these. The ranks for single/multiple choice tests, the timetable for taking the examinations in the various disciplines, the prerequisites for admittance of the students to the examinations, and the maximum of time to pass the examination are all laid down in the Study and Examination Rules which are published on the website of the Faculty (www.vetmed.uni-muenchen.de/studium/download/pruefungs_studienord-29sep17.pdf).

The examinations in veterinary medicine are state examinations (*Staatsexamen*) and thus are under the supervision of the District Government of Upper Bavaria and not of the University or the Faculty itself. The examinations are carried out by members of the two Boards of Examiners: *i)* Two preclinical Veterinary Examinations (*Vorphysikum and Physikum*) and *ii)* three Veterinary Examinations (*Tierärztliche Prüfung*), one examination every year. The members of these boards are professors or experienced staff members. They are chosen by the University and then confirmed by the District Government of Upper Bavaria. The examinations are organised and planned by the chairmen of the Board of Examiners with support of the Faculty's Examination Office.

The examinations are held during the lecture-free time between two semesters. The final exams are scheduled during the 11th semester.

Some subjects are taught and then also examined by external professors. These are:

- Physics: Prof. Dr. Jörg Schreiber from the Faculty of Physics (LMU)
- Botany: Prof. Dr. Silke Werth from the Faculty of Biology (LMU)

According to §17 of the TAppV, three attempts are allowed for each examination. An additional member of the Board of Examiners must be present as a witness at the third attempt.

Students have to pass all examinations of a period (Preclinical Veterinary Examination and Veterinary Examination) including retakes within one year after admittance to the first attempt. This duration may only be extended in case of illness documented by a medical certificate. In case of composite exams, each component of the exam must be passed.

Theoretical knowledge is examined by oral examinations, multiple choice examinations, and digital examinations comprising pick-N questions, multiple choice questions, Kprime questions, Hot spot identification, Long Menu questions, identifying Region of Interest questions, matching questions and others. The type of examination used, depends on the Faculty unit and subject.

The Faculty uses the following specific methodologies for assessing the acquisition of pre-clinical theoretical knowledge and practical skills:

From 1st to 4th semester, students deal with the anatomy of domestic mammals. The lecture topics are always accompanied by practical exercises, to apply and deepen the theoretical knowledge in the following course. Intensive supervision of the students takes place within these courses. Students can ask questions and clarify ambiguities at any time. Lectures in physiology, chemistry, and biochemistry are given in the 2nd, 3rd, and 4th semester and provide the basis for understanding of how organisms, organ systems, individual organs, cells, and biomolecules carry out their chemical and physical functions in a living system. Practical courses in physiology and biochemistry are offered in the 3rd and 4th semester and support better understanding of elected physiological biochemical principles, organ functions, and regulatory systems. Each subject section is completed with a practical oral test in small groups of four people. The practical oral test can be repeated twice within one semester. If all compulsory



practical exercises and tests during the respective semester have been passed, the students receive their certificate and can be admitted to the 2nd preclinical veterinary examination (*Physikum*). In the histology course, different types of tissues are independently examined by microscope. The students get the opportunity to deepen their skills using the microscope and to recognize different types of tissue based on their respective histological characteristics. The histological course deals with blood and circulatory organs, lymphatic organs, respiratory system, digestive tract, liver, pancreas, urinary organs, genital organs, endocrine organs, sensory organs, nervous system, skin, and appendages. The students use a sketch book to record the essential characteristics of the respective tissue. At the end of the 4th semester a written final exam takes place to ensure the level of knowledge. In case of failure or disease this written test can be repeated twice within one semester. Passing this exam is required for admission to the 2nd preclinical examination.

In the lectures on animal nutrition and dietetics (5th + 6th semester) the students get to know basic principles of animal nutrition and common feedstuffs as well as German and European feed legislation. They learn about the feeding practice for pets and farm animals and deepen their knowledge about nutritive intervention in case of disease (prevention/therapy). The lectures are complemented by practical courses in both semesters where the theoretical knowledge is used in practical tasks and case examples. In the 5th semester, students learn the principles of energy and nutrient requirements and ration calculation. Feed samples are used to demonstrate and practice the sensorial testing of feedstuffs hands-on. In the 6th semester, students learn how to conduct a computer-based ration calculation with Microsoft Excel templates. They work on case examples of pets (different life stages and diseases) and farm animals (different production stages/performance), gaining experience in evaluating current diets and how to improve feeding regimes. This builds on the basic knowledge of feed items, how to calculate and handle feeding recommendations from the previous semester and the lectures. Practical skills in food hygiene (examination techniques, manufacturing of meat products, hygiene controls) are taught during a course in the practical year (8th + 9th semester) as well as during internships. In accordance with the Study and Examination Rules of the Faculty the examinations are carried out as written exams without an assessment of practical skills.

Practical skills in meat hygiene (post-mortem examination, laboratory tests) are taught during a course in the practical year (8th + 9th semester) with an oral and practical exam for each student at the end of the course.

The microbiology course consists of 14 sessions in the 7th semester. Diagnostic methods in bacteriology, virology, mycology, and serology are demonstrated to and performed by every student. Among other things, students learn preliminary identification of bacteria and fungi by their macroscopic appearance on culture, microscopic investigation of cell cultures, cytopathic effects of viruses, native and stained bacteria and fungi, staining methods, function and usage of selective growth media, application of different techniques for identification and characterization of pathogens, serological assays for antibodies in patients' sera or in milk (serum neutralization, ELISA, western blot, immunofluorescence), and in vitro tests for evaluation of the resistance versus antibiotic and antimycotic drugs.

The lectures in animal breeding and genetics cover the fundamentals of heredity from Mendel's rules to molecular genetics and its applications in experimental genetics and animal breeding. The first block includes modules such as classical heredity, DNA, replication and repair, transcription and translation, and gene diagnostics, among other things. In addition to theoretical principles, examples of applications ranging from classical hereditary diagnostics to functional genome analysis are discussed. Epigenetic mechanisms are discussed as a molecular basis for explaining genotype-environment interactions. Examples of topics covered in the second block are basics of population genetics, genetic and environmental effects on the expression of quantitative traits, strategies of crossbreeding and inbreeding, major reproductive techniques in domestic animals, and methods of genetic modification of animals.



Examination	Subject	Semester	Percentage (%)	Method of examination
1st Preclinical Veterinary Examinations (<i>Vorphysikum</i>)	Botany	1	100	MC
	Physics	1	100	MC & written
	Zoology	1	100	MC
	Chemistry	2	100	Oral
2nd Preclinical Veterinary Examination (<i>Physikum</i>)	Animal breeding & genetics	3	100	Oral
	Anatomy	4	100	Oral
	Biochemistry	4	100	Oral
	Histology & embryology	4	100	Oral
	Physiology	4	100	Oral
Veterinary Examinations	Propaedeutics	6	100	OSCE
	Parasitology	6	100	MC
	Pharmacology & toxicology	6	100	MC
	Animal nutrition	6	100	Oral
	Bacteriology & mycology	7	100	Oral
	Milk sciences (part I)	7	80	MC
	Radiology	7	100	MC
	Virology	7	100	Oral
	Food sciences & food hygiene (part I)	8	70	MC
	Animal husbandry & hygiene	8	100	Oral
	Drug and narcotics law	9/10	100	Written
	Poultry diseases	11	100	Oral
	Animal welfare & ethology	11	100	MC & written
	Control and epidemiology of infectious diseases	11	100	Oral
	Pathology & pathohistology	11	100	MC & written
	Surgery & anaestiology	11	100	Oral
	Meat hygiene	11	100	Oral
	Forensic veterinary medicine, professional and ethical law	11	100	MC & written
	Internal medicine	11	100	Oral
	Food sciences and food hygiene (part II)	11	30	MC & written
	Milk sciences (part II)	11	20	Written
	Reproduction medicine	11	100	Oral

Abbr.: MC = Multiple choice, OSCE = Objective Structured Clinical Examination

Lectures in pharmacology and toxicology are given in the 5th and 6th semester and provide the basis for rational pharmacotherapy of common diseases and toxicoses in veterinary medicine. Theoretical skills are deepened by elective courses in clinical pharmacology and advanced pharmacotherapy offered in the 7th semester. Multiple choice tests are used to assess successful teaching. Teaching in drug and narcotics law consists of lectures giving an overview on the veterinary drug market and legal aspects of drug compounding and prescription in companion as well as livestock animals including controlled substances in the 8th semester. Theoretical aspects are completed by training practical skills in pharmacy, drug prescription and dispensation during the 9th and 10th semester in small groups of students using the open classroom format. A written examination in drug and narcotic law evaluates teaching success.



A practical course in milk science takes place in the 7th semester and comprises 14 lessons. Students learn diagnostic approaches for detecting pathogens involved in different types of mastitis. Using examples and tastings, they learn about the labelling and sensory characteristics of important product groups. In addition, they are taught the legal regulations.

Besides those 'Mini-Examinations' described above, lecture content is assessed by two ways. Interactive animated lectures on moodle contain quizzes that the students can use for self-assessment. Some of the electives also contain quizzes students can complete at their leisure and those results are visible to the lecturer and sometimes condition for passing the elective. And finally lecture content is assessed by examinations (see 8.2 and 8.4).

To acquire clinical practical skills, students have the opportunity to choose between clinics during their clinical rotations (9th term). During a 12-week period, students rotate through every service of the respective clinic, participate and assist in procedures, and are involved in all diagnostic procedures and treatment. Depending on the chosen clinic, students have to pass written and oral tests before being allowed to perform and assist surgery (e. g. caesarean section in sheep). Acquired knowledge and practical skills are assessed by supervising veterinarians at the end of the clinical rotation. To further guarantee that each student tracks her/his clinical skills, a logbook was developed by the Faculty's logbook committee. The logbook allows students to document which clinical procedures they have already performed and should perform in the future to develop a broad range of clinical skills. The logbook consists of a general part with basic across-species skills and a species-specific part with core and advanced skills (see 3.3.1, 5.1.2, Appendix).

8.2 Assessment Outcomes

8.2.1 Advertising and transparency of assessment criteria

Catalogues containing learning aims (Lernzielkataloge) are available for the vast majority of subjects on the Faculty's moodle website and are constantly updated. In some subjects, students can do mock examinations to get familiar with the assessment procedure (particularly with electronic examinations). In oral examinations, examiners keep a written summary of the examination and their assessment that is available for students on request. Multiple choice examinations can also be reviewed by students on request.

8.2.2 Process for awarding grades

The grading process including barrier assessment is based on the legal requirements, i. e. the Ordinance of Veterinary Licensure (TAppV) and the Study and Examination Rules of the Faculty. For both written and oral examinations, all questions are compiled according to the program learning outcomes and are constantly updated to reflect scientific developments and new regulations. Furthermore, catalogues containing learning aims are available for almost all subjects on the Faculty's moodle website (see 8.2.1).

Written examinations:

Prior to a written examination, all questions and points assigned for answers are reviewed by a panel of examiners. The questions are selected by dividing the exam into subtopics and determining the number of questions per subtopic to ensure that as little content as possible is left out. A total of 60% of the possible points must be achieved to pass the examination. There is a meeting after the assessment to evaluate the answers and identify difficulties in answering the questions. Question pools are regularly updated and take into account the statistical evaluation of previous examinations as well as changes in the teaching material.

The Faculty is the member of The Umbrella Consortium for Assessment Networks (UCAN) since 2017, therefore uses diverse software and tools to perform and assess exams. For the



subjects zoology, botany, pharmacology and toxicology, radiology and animal welfare and ethology, the questionnaire software is used, while the examinations in forensic veterinary medicine and professional law, internal medicine, surgery and pathology are performed via iPad. Prior to a UCAN-examination, all questions are discussed by a panel of experts including an educational expert and points assigned for answers are reviewed at the same time. Those points for the most parts are assigned by a computer system that is used by many medical schools in Europe, but also some veterinary schools and some veterinary colleges for their board examinations. Some parts of the examinations are free text answers, those are corrected, and points assigned based on the sample answers discussed prior to the examination.

Oral exams

Before each examination, all examiners meet and discuss general questions as well as case related questions for exams in clinical subjects. For each question there is a list of points that are expected to be part of the answer, which allows a transparent evaluation of the candidate's performance. During oral exams, the questions and grading for each student are documented in written protocols. After each oral exam every candidate gets his/her grade and also detailed feedback. After the exams a meeting of all examiners takes place to discuss the outcome and potential difficult questions.

8.2.3 Post-assessment feedback process

Examiners are encouraged to provide students with feedback following any oral assessment without prior request. The feedback should also include a detailed explanation about how the exam was graded. After written examinations each student has the right to view the exam with the corrections made by the examiner. If requested by the student, the examiner must explain certain corrections and give advice on how the student can improve. This is necessary especially if students plan to appeal against their results. As it is common practice of students to collect exam questions (along with their answers) and provide them to younger students we do not provide sample solutions.

If warranted, students can also anonymously contact any academic staff directly via a letter box installed at the Dean's Office. This feature is currently being digitalized to be available via the Vet Med LMU mobile app and the Faculty's website. Another option for students to receive guidance for improvement is the so-called "progress test" that can be taken voluntarily once per year. While the main goal of this test is to record the level and growth of expertise during the study of veterinary medicine, it also denotes fields in which the student needs to improve.

8.2.4 Appeal Processes

Students can complain about examinations to the respective examiner, the examination office and/or the chair of the examination board. The chair of the examination board is always informed and then requests the examination protocol or a statement from the examiner and a statement from the student. Students are required to submit medical certificates related to the complaint as soon as possible and in the correct form. If the complaint is justified, an examination may be annulled. The repetition of an already passed examination or partial examination to improve the grade is excluded. (PStO §9 Para. 3 and §10 Para. 10). Students may also complain to the examiners about individual examination items of a written examination, which will then be examined independently. The complaint must be received by the examiner in written form. According to PStO §12 Para. 2 No. 6, faulty examination tasks may not be considered when determining the examination result. For oral examinations, a transcript of the examination is to be prepared in accordance with PStO §13 Para. 2 and in accordance with §14 Para. 1 TAppV.

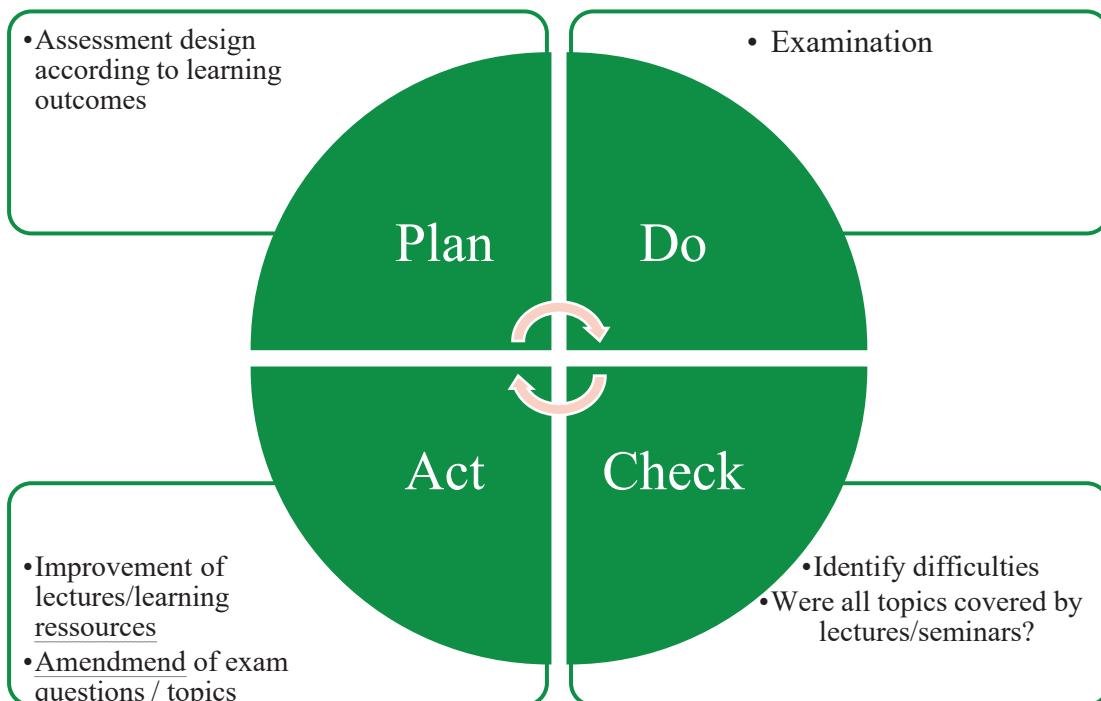


8.3 Assessment Review

The Curriculum Committee was re-established in April 2021 and meets once monthly (See 3.4). Initially the committee discussed the Day-One Competences, translated those to make them easily available for students and staff, adapted them to individual subjects in the curriculum, and provided lecturers with the appropriate information to point out to students which Day-One Competences are taught in their lectures and why. The Curriculum Committee works in close liaison with the subcommittee for the student logbook to provide students in the clinical year with a logbook for their externships and clinical rotation (see 3.3.1., 5.1.2, **Appendix**). In Germany, there is a legal requirement for extensive clinical externships of at least 20 weeks. Feedback from students about the individual practices after their externship is submitted to and assessed by the Dean for Student Affairs. Currently we are working on a feedback system for the veterinarian in charge after the externship.

Examinations are planned according to the learning outcomes with different pre-defined competence levels designed based on the Day-One Competences. This ensures the acquisition of necessary competences and knowledge for further studies or graduation. Detailed catalogues with learning objectives (*Lernzielkataloge*) for exams are provided by each chair via the Faculty's moodle platform. This allows targeted studying and preparation for any assessments. In addition, it enables standardization exams and thus increases the fairness between the students.

A PDCA circle is in place to ensure assessment design based on learning outcomes, to identify and rectify difficulties after examination and define improvement steps to fulfil quality assurance guidelines.





8.4 Certification of Achievement

During all examinations, the learning objectives to be achieved are queried. The oral and written examinations get scored with the following grading system:

German Grade	Description	ECTS System	Description
1.0	Very good	A	Excellent
2.0	Good	B	Very Good
2.5		C	Good
3.0	Satisfactory	D	Satisfactory
4.0	Sufficient	E	Sufficient
5.0	Fail	F	Fail

All grades achieved can be viewed by students via the LSF platform. All exams and exam formats are adapted to the appropriate level of study and are continually evaluated and optimized through curriculum development.

There are several different measures to encourage students to take an active part in the learning process. First, the logbook committee created a logbook which comprises all clinical skills which are required by TAppV and the EAEVE "Day-One Competences" that need to be obtained by all students. Thus, students can keep track of their own 'clinical evolution'. Lacking skills can easily be identified and therefore actively sought out while in clinical rotations.

Second, the utilization of the LMS moodle is constantly being expanded. While at first moodle was mainly used as a platform to distribute information and learning materials it has now become an integral part of the whole course of studies. The Coronavirus pandemic accelerated this evolvement. Now moodle offers not only mere information and learning materials but also whole online lecture series and self-directed learning courses (with online assessment). Online lectures are delivered in different formats - from recordings to fully elaborated narrated (iSpring) lectures with embedded quizzes. Online lectures allow asynchronous learning suitable for students with other obligations such as for example childcare.

The skills lab is an integral part of the curriculum. Students have to complete a set of several stations in the skills lab covering all animal species and closing gaps in the student's veterinary education.

8.5 Achievement Evaluation

The logbook provides the students and their EPT mentors with an overview on the necessary Day-One Competences as recommended by EAEVE and based on TAppV. The students are encouraged to focus on core skills, but also to obtain advanced skills based on their clinical focus to optimize their learning experience during the EPT and clinical rotation. After each EPT and clinical rotation, both, the students and mentors are encouraged to tick off acquired skills and to comment on the course of the EPT or clinical rotation. After completion of the practical training period, the logbook is intended to provide a detailed summary of the acquired skills for the student and their veterinary mentors. Thus, the logbook provides information for the individual student in which areas further practical knowledge needs to be obtained. Moreover, it provides valuable information for our faculty on the conveyed educational content and potential areas where learning may still need to be intensified throughout the clinical rotations. Supervised activities with clinical patients are another method of providing students to information. Furthermore, students can practice certain procedures repeatedly on models under supervision at the Skills Lab. Lectures on the moodle website are available prior to and during the clinical rotation to provide the theoretical knowledge behind the practical skills.



8.6 Comments on Standard 8

With the help of the detailed study guide, the moodle platform, and the information on the Faculty's website, students can easily get an overview on exams to be passed (e. g. type of exam, requirements). The program learning outcomes help students to anticipate the scope of the exam and to prepare for them in a targeted manner. Examiners regularly revise exam questions and communicate any updates to students. Students have access to comprehensive online teaching materials, which were extensively supplemented during the Coronavirus pandemic. Clinical rotations were reorganised from rotating through all clinics at the Faculty to an animal-specific rotation so that students are provided an in-depth education in their chosen discipline.

8.7 Suggestions for improvement on Standard 8

Some examinations have already been optimized and converted into electronic UCAN-exams. It is aimed to further improve those using the computerised evaluation tools available in the programme. In addition, we aim to use this electronic evaluation system for more examinations in the future. The logbooks have just been recently developed and it has to be tested how suitable they are to track the students' practical skills or if further measures are needed.

Students during clinical rotations are currently evaluated individually by each clinic. In the future it is planned to standardise the evaluations throughout all clinics. Furthermore, a feedback system for veterinarians in charge during externships is currently being developed.



9. Academic and support staff

9.1 Staff strategy

In order to meet the high standards of quality in teaching, research and service, our faculty prioritizes hiring qualified personnel. All faculty staff, excluding student assistants and research assistants, are employed in public service of the state of Bavaria. It is legally regulated in the collective agreement for the public service of the federal states of Germany (*Tarifvertrag für den öffentlichen Dienst der Länder*) according to which qualifications and criteria staff must meet to hold a certain position.

The Faculty encourages all lecturers as well as any other staff involved in teaching to participate in LMU's teaching qualification programs. The staff of the Faculty is supposed to attend a series of seminars on topics including but not limited to: reflecting own behaviour, giving and taking feedback, basics of didactics, holistic view on teaching, right (teaching) methods for the right purpose, dialogue techniques (conducting conversations, questioning techniques, listening techniques), eLearning, supervision of theses, basics of examining. These seminars also include a full day of practice to implement and demonstrate, what has been learned. Inclusion of these programs as compulsory academic curriculum has been realized in a majority of units and its implementation is in progress. In some facilities, participation in these seminars is already mandatory.

Professorships are only staffed with people who already have comprehensive experience in research and can demonstrate this with a doctor title or a habilitation. During the application process for professorships, parts of the interviews are public, so that staff, students and stakeholders can get an impression of a potential new professor. This also gives an insight into the teaching ability of potential candidates. Within the Centre for Clinical Veterinary Medicine, there is also an agreement that only people with a diplomate degree of their respective specialty may hold a higher position in the Centre for Clinical Veterinary Medicine.

The Biosafety Manual is used to ensure that all faculty members have a comprehensive understanding of biosafety. The Biosafety Manual is available on the Faculty's moodle platform.

9.2 Staff numbers and qualifications

9.2.1 Factual information

Table 9.2.1 Academic staff of the veterinary programme

Type of contract	2021	2020	2019	Mean
Permanent (FTE)	94.50	87.75	91.75	91.33
Temporary:				
Interns (FTE)	1.90	4,00	3.25	3.05
Residents (FTE)	13.10	15.70	18.95	15.92
Doctoral students (FTE)	11.30	18.78	17.90	15.99
Practitioners (FTE)	2.00	1.75	1.75	1.83
Others (e.g. academic councilor) (FTE)	20.10	24.90	19.68	21.56
Others (bioinformatician) (FTE)	0.40	0.40	0.40	0.40
Others (research associates) (FTE)	44.05	33.07	32.32	36.48
Total (FTE)	187.35	186.35	186.00	186.57

**Table 9.2.2** Percentage (%) of veterinarians in academic staff

Type of contract	2021	2020	2019	Mean
Permanent (FTE)	97.4	98.1	98.1	97.9
Temporary (FTE)	99.6	99.5	99.5	99.5

Table 9.2.3 Support staff of the veterinary programme

Type of contract	2021	2020	2019	Mean
Permanent (FTE)	268.72	270.87	265.42	268.34
Temporary (FTE)	9.93	7.65	15.58	11.05
Total (FTE)	278.65	278.52	281.00	279.39

Table 9.2.4 Research staff of the Establishment

Type of contract	2021	2020	2019	Mean
Permanent (FTE)	0	0	0	0
Temporary (FTE)	57.35	72.50	71.98	67.28
Total (FTE)	57.35	72.50	71.98	67.28

The number of academic and support staff will not significantly differ in the next 3 years.

9.2.2 Recruitment and training of teaching staff

Support staff is recruited according to university policies, where a job description and advertisement is placed in relevant journals and papers and on various relevant websites.

Across Germany, there are specific training programmes for veterinary nurses and technicians that are uniform and completed with an examination. The support staff must undergo continuing professional development courses, organised and/or advertised by the individual units. For example, in the Small Animal Medicine Clinic, in-house training for support staff is held weekly for 1 hour, in which clinicians discuss relevant topics (as appropriate with practical exercises) and technicians responsible for certain tasks teach their colleagues how to perform those. In addition, off-site training in form of external courses about certain topics is offered to individuals on a regular basis.

9.2.3 External secondary activities

In principle, secondary (off-site) activities must be approved by the LMU administration. However, there are different arrangements for professors, civil servants and employees covered by collective agreements. University resources, such as facilities (e.g. rooms, laboratories), personnel or materials may only be used for the performance of secondary activities after this has been approved by the LMU administration. Permission can only be granted if there is a public or scientific interest of the secondary activity. If LMU resources are used for the performance of secondary employment, the university must charge fees (reimbursement of costs and benefits). The payment of a fee may be waived under certain conditions.

Formal rules for professors

An honorary position or an activity as a lecturer or speaker is not subject to approval. In the case of consulting activities, teaching assignments, self-employed/freelance activities or private animal treatment, a formal permit is required. Important regulations in connection with secondary employment are as follows:

1. Taking on a secondary activity must not lead to a conflict of interest with the tasks at the LMU.



2. For reasons of welfare, all approved secondary activities together may not exceed the scope of an individual working day.
3. Secondary employment contracts are contracts under private law between the respective clients and the professor. The contract must therefore state the private address of the professor, not the address of the chair or the LMU. The university does not co-sign this contract under private law, as the university has no contractual relationship with the private law client.
4. Consultancy contracts must contain a reference to §42 of the Employee Invention Act. Alternatively, the university requires a written declaration that no inventions or patents will be made in the course of the part-time employment.

Formal rules for civil servants

As for professors, an honorary position or the activity as a lecturer or speaker is not subject to approval. In the case of consulting activities, the assumption of teaching assignments, self-employed/freelance activities or the assumption of so-called "mini-jobs", a permit is required. Important regulations in connection with secondary employment are the same as for professors in point 1, 3 and 4, additionally these regulations are in place:

1. for reasons of welfare, all approved secondary activities together must not exceed eight 8 hours per week;
2. the licence can be granted for a maximum of five years, after which a new application must be submitted.

Formal rules for employees

The weekly working time of employment at the university together with the time spent on secondary employment shall not exceed 48 hours per week.

9.3 Work contracts

Each contract is reviewed by the LMU's legal department as well as the personal office and is in full concordance with German employment laws. For each position a certain salary bracket is predetermined based on the requirements of the individual position, for full transparency the salaries of the State of Bavaria for the individual positions are publicly available. There are two types of contracts, either as a public sector employee or as a civil servant, the latter is a live-time contract, the former corresponds to contracts used in industry.

9.4 Programme devoted to academic and support staff

9.4.1 Programmes for professional growth and development

Center for Leadership and People Management

The Center for Leadership and People Management (CLPM) is a research, training and consulting institute at the LMU Munich. Founded in 2007 as part of the Excellence Initiative, the CLPM offers scientifically based personnel development in the areas of personal, leadership and teaching skills specifically for LMU scientists. Its focus lies on linking research and practice. Services are aimed primarily at professors and post-doctoral academics. For graduate students, the Center also offers a seminar programme tailored to the needs of young academics. The Center's vision is to establish a leadership and collaborative culture at LMU Munich, characterised by excellence in the areas of performance and innovation and by appreciation for the individual. This is achieved with specific training and awareness measures in the areas of



management, collaboration, teaching and communication. All of the trainers hold a high level of professional and methodological competence and place particular emphasis on the transfer of training contents into everyday professional life. In addition, all of events are accompanied by a specific evaluation program.

LMU PROFiL

PROFiL (*Professionell in der Lehre*) is the Ludwig Maximilian University of Munich's institution for staff qualification of teachers. PROFiL offers all teachers at LMU Munich, as well as teachers at other Bavarian universities, training and continuing education in higher education didactics through courses, consulting and coaching. The PROFiL courses thrive on interactive teaching and support of constant improvement in teaching. As proof of the qualification, teachers can acquire the 'Certificate in University Teaching Bavaria'.

Teaching Days of the Centre for Clinical Veterinary Medicine

Residents and doctoral students each year receive two full days of lectures (*Zentrumslehrtage*) about important topics in academic life such as teaching and assessment of teaching, how to write and evaluate manuscripts, statistical procedures (and a statistician is employed by the faculty to assist in planning studies and assessing data), PowerPoint presentations, and many more. Some of those lectures are then available as digital lectures on moodle. The two-day event is open to any member of the Faculty of Veterinary Medicine.

Other opportunities for profession growth and development

Assessment of permanent clinical staff occurs annually by the clinic director in a personal meeting, where several performance criteria for the last year are evaluated (publications, grants, research studies, doctoral students, student evaluations etc.) and the plans and goals for the next year are discussed. In that meeting recommendations for further professional development are given. In addition, it is up to the clinical staff, to organise sufficient continuing education in the chosen areas of research and expertise to be at the cutting edge of the chosen field. Opportunities may include but are not limited to visiting national and international meetings, exchange of information with external experts, visits at other institutions or clinics to discuss and initiate research projects and involvement of other institutions in gathering data, specimens or evaluating data and specimens as required. Permanent staff applying for professorships elsewhere receive thorough coaching in interview technique by the committee of service chiefs and input on their presentations about their research data as well as student lectures they are obliged to give during the interview.

Every doctoral student and resident is obliged to present her/his research on a national or an international congress.

Support staff in the Small Animal Medicine Clinic get one hour of weekly training in various aspects of the clinical work except for the holiday break. In addition, support staff can voice any desires about additional education outside their original fields and obtain additional qualifications if so desired.

9.4.2 Appraisal and promotion procedures

Professors are assessed by the LMU University, where they can apply for salary increases every three years. If they get granted an increase, it is for three years only, they can apply for a second time, and if the increase is granted another time, it is permanent. Three years later one can apply again. The professors' achievements are evaluated by the executive board of the LMU.

In addition, non-professorial employees can be eligible for annual special payments by the Central University Administration by showing outstanding achievements in different aspects,



those employees are proposed by the Council of the Department for Veterinary Science and the Centre for Clinical Veterinary Medicine, and their names and achievements submitted to the CUA.

9.4.3 Mentoring and supporting procedures

08LMU Mentoring Program

The 08LMU Mentoring Program of the Faculty of Veterinary Medicine/LMU Munich aims to encourage excellent junior scientists of the faculty to pursue a scientific carrier as professorships and to promote their career progression. Regarding equal opportunity the program works towards an increasing female share in the professorial positions and an increasing diversity of applicants for professorships. The program aims to establish and to strengthen a long-term supportive relation between mentee and mentor. Applicants can enter the program every semester and participate in its activities for a duration of two years. The 08LMU Mentoring Commission decides on admission based on the scientific excellence and a career plan presented by the applications. Applications for funding by the German Research Foundation also qualify for the mentoring program.

Mentoring in the clinics as exemplified by the Small Animal Medicine Clinic

In the small animal medicine clinic, residents and doctoral students are assessed regularly, typically every 6 to 12 months by the service chiefs. Residents have one meeting annually with the clinic director, the mentor and the resident ombudsman. Depending on the service and residency programme, residents may visit other faculties nationally or more often internationally for varying periods of time. They can also seek advice from the resident ombudsman of the clinic in case of organisational as well as academic problems.

9.5 Assessment of teaching staff

9.5.1 Teachers' assessment

In accordance with Article 30 of the Bavarian Higher Education Act, courses are evaluated regularly and on a random basis. The Faculty of Veterinary Medicine implements a system of evaluation of teaching by the students for all intra- and extramural courses. The evaluations are voluntary or mandatory, paper-based or online, depending on the course. Most evaluations by teaching staff are unannounced, but many teachers would also like to see specific evaluations by students. All data is collected completely anonymously. It aims at providing indicators for the Quality Management.

For each theoretical teaching module (lectures, elective courses etc.) the students are asked about:

- necessary preconditions;
- general organization of the teaching module (structure, speed, degree of difficulty, learning objectives, linking theory and practice);
- adjustment of teaching modalities to the aims and objectives of the lectures;
- communication between teachers and students (interactive lecturing);
- assessment modalities.

For each practical teaching module ((clinical) exercises, laboratory placements, practical courses etc.) the students are asked about:

- necessary preconditions and group organisation;
- assessment of the course instructor (competence, preparation, behaviour, motivation, communication etc.);



- general organisation of the teaching module (structure, speed, degree of difficulty, learning objectives, linking theory and practice);
- adjustment of teaching modalities to pedagogical objectives;
- assessment modalities.

Evaluation is quantitative (appreciation scale) and qualitative (open comments).

The results of these assessments are then available to the teacher of the course to allow specific feedback for improvement. Due to personal rights, publishing of the evaluation results or making it available to others is prohibited by law. The teachers are required to discuss the results with the students and to respond to criticism and wishes. The results are also communicated to the Dean for Student Affairs. If necessary, lecturers can communicate their results with the staff of the Office for Student Affairs and obtain support to improve their teaching.

The exact structure of each questionnaire can be found in the **Appendix**. The evaluation of teaching by the students is now a fully integrated tool for continuous improvement of our veterinary program. It contributes to the development of teaching and pedagogical practice and is constantly evolving.

9.5.2 Decisional process

Two groups of academic staff are hired, professorial and non-professorial. For the former, a detailed discussion about the needs and vision of future development of the Department of Veterinary Science or the Centre for Clinical Veterinary Medicine takes place within the respective executive council. Subsequently, the concept as well as the details of the position advertisement is presented to the faculty council, discussed again and then the position is advertised. After receiving the applications, a committee specifically appointed for this particular position reviews the application and ranks the candidates. The ranked list is again presented at the faculty council, discussed and after agreement the first 3 to 4 candidates are invited for interviews. In this interview, a candidate presents her-/himself to the committee for questions and subsequently gives a lecture about her/his research achievements and plans to the faculty and a lecture about the general topic of her/his specialty to students and faculty, both of which are graded. The committee then ranks the top applicants again and that short list has to be approved by the Senate of the LMU Munich. Once it is approved, the position is offered to the first in line, if this person accepts, the position is filled, if not, the next person in line receives the offer.

Non-professorial permanent academic staff is hired by the director of the clinic or institute without specific involvement of the faculty or the university administration, but the number of permanent staff per institute or clinic cannot be changed. Typically, faculty of the institute or clinic form a committee headed by the director. That committee discusses possible candidates and gives recommendations, the final decision is up to the director of the facility.

Assessment of permanent clinical staff occurs annually by the clinic director in a personal meeting, where several performance criteria for the last year are evaluated (publications, grants, research studies, doctoral students, student evaluations, etc.) and the plans and goals for the next year are discussed.

Finally, non-permanent staff (doctoral students and residents) is hired by the service chiefs and mentors individually. Resident applicants are usually discussed by the committee consisting of the service chiefs of the clinic, the final decision is up to the resident's mentor and/or the director of the individual clinic or institution. Selection of the doctoral students is up to the individual mentors, typically there is no formal discussion about those candidates.



9.6 Comments on Standard 9

There is a need for additional personnel at the administrative level, particularly in institutions with clinical and diagnostic services; the number of veterinary technicians is also too low. Similarly, the situation with laboratory staff and scientific assistants is tight, especially in clinics with 24-hour services. When running its own practice, the income of a veterinarian usually is much higher than that of an employee of the university at a comparable level of expertise.

9.7 Suggestions for improvement on Standard 9

We strongly suggest providing more personnel to the Faculty. This request primarily accounts for technical staff, since an increase of the technical staff would not affect the number of students admitted to the establishment. However, a moderate increase of the scientific staff and more tenured positions, particularly in the clinical areas would seem prudent although unlikely.



10. Research programmes, continuing and postgraduate education

10.1 Research activities and programmes

At the Faculty of Veterinary Medicine, undergraduate veterinary education aims for students to gain an exceptional and unique breadth of concepts that allows them to fill key roles in society. In addition to primary care for animals, they will take responsibility for veterinary public health and contribute to the “One-Health” concept through collaborative, transdisciplinary and multisectoral approaches.

The Faculty of Veterinary Medicine at the LMU is one of five veterinary establishments in Germany and the only one in Bavaria. It is organised into the Department of Veterinary Research and the Centre for Clinical Veterinary Medicine and offers a distinctive research environment linking clinical challenges with interdisciplinary basic research. With the development of the new veterinary campus in Oberschleißheim, it will offer cutting edge research facilities and integrate basic and preclinical research with advanced animal models. Furthermore, numerous links and collaborations exist with colleagues at the Faculties of Medicine and Biology as well as with colleagues at research institutes (Max-Planck-Institute, Helmholtz Zentrum etc.) within the research area of Munich and others. This unique, stimulating environment led to the successful application for several national and international research programmes and the recruitment of stellar young principal investigators, further strengthening the research portfolio.

At the Faculty of Veterinary Medicine, the research programme focuses on four key areas:

- Translational Medicine
- Infection and Immunity
- Reproductive Medicine, Biology and Biotechnology
- Veterinary Integrative Health

Although there is a general focus on important veterinary medical issues, there is close, interdisciplinary cooperation with other faculties, such as human medicine, biology, physics and chemistry, which is also reflected in the memberships of the individual research groups in collaborative research centres and priority programs of the German Research Foundation (DFG). The third-party funds raised have risen constantly in recent years. Third-party donors include the DFG, the European Community (including ERC grants), the Federal Ministry for Education and Research (Bundesministerium für Bildung und Forschung, BMBF) and other federal ministries, the Wellcome Trust, the Bavarian Research Alliance, state ministries, foundations and industry. The Faculty of Veterinary Medicine has a certain 'beacon function' through the establishment and application of the most modern technologies, which is also reflected in the successful recruitment of several winners of an ERC Starting Grant (Prof. Dr. Siegel, Prof. Dr. Sabass and Prof. Dr. Frantz) as well as a Sofja Kovalevskaya award winner, Prof. Dr. Marcia Ferraz, within the excellence initiative of the LMU. This successful work with young people will give further important impetus to the Faculty and contribute to sharpening its profile. These successful initiatives have been and continue to be a central area for many third-party funded projects at various clinics and institutes. The common goal is to use the latest technologies to answer a wide range of (veterinary) medical questions both in basic research and in translational clinical projects.

Both, the Department of Veterinary Sciences and the Centre for Clinical Veterinary Medicine, are further involved in developing an interdisciplinary centre for civilization disorders at Großhadern Campus of the LMU medical faculty (ICON; www.lmu.de/en/newsroom/news-overview/news/new-research-center-for-grosshadern-martinsried.html). This allows for



comparative and translational research and improvement of patient care for both people and domestic animals.

10.2 Students and research

The Faculty of Veterinary Medicine and its teaching staff attach a great value to convey evidenced-based medicine, good scientific research and the necessity of constant live-long learning. Lecturers are required to take up these topics in the lectures, to integrate them thematically and to demonstrate them using examples.

Pre-clinical part

- Good laboratory practice and basic scientific methods are taught during the laboratory courses in chemistry, physiology and biochemistry.
- In laboratory animal medicine, first knowledge and skills for research using animal models are given.

Clinical part

- In biometrics, fundamental knowledge of statistics, study design, evaluation of scientific methods and diagnostic values are taught.
- The courses in animal welfare encourage the students to process an animal welfare topic scientifically and present their outcomes to the group.
- Concepts of epidemiological questions, as well as epidemiological study design, descriptive measures of disease incidence and disease frequencies and test characteristics are taught. In addition, the importance of different sample sizes in studies is presented and an introduction to decision analysis is given. The lecture includes many practical examples as well as interactive collaboration between the students and instructor and encourages critical review of published information.
- During the clinical case presentations evidence-based medicine in combination with the application of recent scientific knowledge is demonstrated and applied.

During clinical training, students are required to independently prepare case reports and clinical workups of cases to practice problem-solving skills as well as critical thinking and self-assessment. During their time in the clinic, students may participate in journal and book clubs to practice scientific reading and writing and to expand their methodological, scientific, and clinical knowledge.

Electives

Multiple elective courses fulfil the range of lectures regarding research practices (reading, writing, presentation).

The university library is a central service facility of the LMU. The library's main function is the provision of literature and information services to the staff and students of the LMU. In addition, it provides an infrastructure enabling the members of the LMU to publish their scholarly works and research data on an open access basis. These data are then available free of charge to users all over the world. The university library offers specific online tutorials for searching books, papers, journals and literature. It provides quiet learning environments, opportunities for printing, scanning and photocopying and subject-specific training courses especially for veterinary students. During the orientation week all students see an information video via moodle about the offers and courses of the university library.

www.en.ub.uni-muenchen.de/index.html
moodle.lmu.de/mod/page/view.php?id=513409

For academic writing the LMU Munich has a writing centre at the Faculty of Languages and Literature, which offers support to students and doctoral students from every faculty on a peer-to-peer basis. The focus is placed on the multi-layered processes of academic writing, always



with reference to recent research on the writing process. [Writing Fellows](#) and student [Peer Tutors](#) support students of all semesters and at all stages of writing, help them engage critically with their writing and develop their skills crucial both for their studies and professional life. In individual writing consultations for papers, protocols, presentations and dissertations, students are supported by trained peer tutors in English and in German. In different workshops and courses basic and advanced skills and techniques are taught. Overall, the aim is to help to improve the skills in academic writing for all students and doctoral students: www.en.schreibzentrum.fak13.uni-muenchen.de/index.html

At the Faculty, academic reading and writing is taught during a number of electives, such as Journal Clubs and courses where the participants have to prepare abstracts and presentations. Most of the university applicants for veterinary medicine initially want to work as clinical veterinarians after finishing the degree. Our Faculty wants to show our students, that there are also other options, such as research or public health service. Consequently, we had established the VETResearch program, which allowed our students to learn about research processes in the early stage of the study and gather experience in the laboratory by working on a project on their own. Different institutions and clinics of the Faculty advertised research projects at the beginning of the year. After application and admission, the participating students worked on their projects either additionally to their regular curriculum or as a mandatory externship (*Pflichtpraktikum*). On the last Friday of November, a retreat was organized, where the participants of the year presented their projects and the results by giving a 15-minute presentation or preparing a poster. In order to complete the project, each participant had to write a report. The reports were published on the homepage of the faculty and can be viewed under www.vetmed.uni-muenchen.de/lehre_vet/vetresearch/was_ist_vetresearch/index.html. Four VETResearch projects were awarded as a [LMU Research Price for excellent students](#) during the last years. VETResearch was also a good opportunity for the supervisors to select potential doctoral students. Due to funding cuts this program was discontinued by the LMU, currently the Faculty is in search of new funding.

10.3 Postgraduate programmes and continuing education

Clinical postgraduate students

In the clinics, postgraduate students work together with undergraduate students on the clinical cases under the supervision of faculty. Conflicts in relation to case management are avoided by discussing the responsibilities several times during a consult, first when the consult is to be seen (who takes the history, who writes the medical record, who performs the first physical examination etc.), then when the initial examination is completed and the case is discussed with the responsible faculty member to decide on necessary further diagnostic procedures, and finally when the case is either discharged (who talks to the owner, who gets the medication, who completes the medical records and instructions for owners etc.) or when the case is hospitalised. For hospitalised cases, rounds are held, in which further proceeding and responsibilities discussed every morning and late afternoon/evening.

Table 10.3.1 Number of students registered at postgraduate clinical training

Training	2021	2020	2019	Mean
Interns:				
Companion animals	14	14	14	
Equine	25	18	19	
Production animals	2	2	1	
Others (Veterinary Pathology)	2	0	0	
Total	43	34	34	37



Residents:				
EBVS disciplines (ECVS)	1	0	0	
EBVS disciplines (ECVDI)	2	0	0	
EBVS disciplines (ECAR)	3	3	3	
EBVS disciplines (ECVD)	2	2	2	
EBVS disciplines (ECVIM - CA (Cardiology))	1	1	1	
EBVS disciplines (ECVIM - CA (Internal Medicine))	4	4	4	
EBVS disciplines (ECVIM - CA (Oncology))	3	3	3	
EBVS disciplines (ECVECC)	2	3	2	
EBVS disciplines (ACVIM (Cardiology))	2	2	2	
EBVS disciplines (ECVCN)	1	5	5	
EBVS disciplines (ECBHM, ECSRHM, ECAR)	5	5	7	
EBVS disciplines (ECPHM)	2	2	2	
EBVS disciplines (ECVP)	2	2	0	
EBVS disciplines (ACVP)	2	2	0	
Total	32	34	31	32
Others (non-EBVS programmes) (German specialist veterinarian Fachtierarzt/Zusatzbezeichnung – not exclusively clinical disciplines)	23	26	25	25

Table 10.3.2 Number of students registered at postgraduate research training

Degrees	2021	2020	2019	Mean
PhD	0	0	0	0
Others - doctoral titles (Dr.med.vet.)	401	390	330	374
Total	401	390	330	374

Table 10.3.3 Number of students registered at other postgraduate programmes in the Establishment but not related to either clinical or research work (including any external/distance learning courses)

Programmes	2021	2020	2019	Mean
Doctoral programme of the ArchaeBioCentre LMU	3	3	3	3

Table 10.3.4 Number of attendees to continuing education courses provided by the Establishment

Courses	2021	2020	2019
A look into the microscope - haematology and cytology	255		
Anaesthetic incidents - first aid for the practice	493		
Antibiotics in small animal medicine - is less often more? Concepts for rational use in internal diseases	129		
Applied Anatomy - Module 1 of the VMPT Course			13
Anatomical Preparation Course Horse: Front Limb	16		15
Anatomical Preparation Course Horse: Hind Limb	13		
Anatomical Preparation Course Horse: Back	15		
Anatomical Preparation Course Horse: Body cavities			
Anatomical Preparation Course Horse: Back	120		
Bird's Clinic Journal Club	14		



Compact Seminar The Cat - The Special Patient in the Small Animal Practice		20	
Compact Seminar Cytology	*	*	20
Compact Seminar Preventive Health Care and Nutrition			18
DCM - how we can diagnose more than just the tip of the iceberg	382		
Doctoral Students Retreat	14		
Don't forget the bladder - disturbed urination in neurological patients	175		
DVG Congress Animal Welfare	600	*	500
DVG Congress Ethology	250	170	170
Eurasia Veterinary Conference	*	95	82
Functional Anatomy of the Horse			12
GWP (talk on equine nutrition)	300	120	120
Immune-mediated haemolytic anaemia in dogs - diagnosis and therapy according to the Consensus Statement	175		
Intensive-Workshop Cardiology	*	19	20
Intensive-Workshop Dermatology	*	20	21
Intensive-Workshop Diseases of the Respiratory Tract	*	*	30
Intensive-Workshop Endocrinology and Diseases of the Urinary Tract	*	*	20
Intensive-Workshop Further diagnostics for Internal Medicine Patients		18	
Intensive-Workshop Geriatrics			20
Intensive-Workshop Laboratory Diagnostics	*	*	15
Intensive-Workshop Neurology			15
Intensive-Workshop Solving Cases Made Easy Part I		20	
Intensive-Workshop Therapy of Internal Diseases			20
Intestinal dysbiosis in dogs - recognition and treatment	349		
Laboratory Animal Science	3		
Molecular Genetics and Gene Technology	3		
Munich Small Animal Series: Chronic Diarrhoea in Dogs			86
Munich Small Animal Series: FLUTD – New findings on therapy and prognosis			71
Munich Small Animal Series: Inflammatory respiratory diseases - when dogs and cats are coughing			65
Munich Small Animal Series: Kennel cough - old hat or new disease?		87	
Munich Small Animal Series: Otitis external in the course of time		74	
Munich Small Animal Series: News from allergy therapy			113
Munich Small Animal Series: Skin knobs - benign or malignant - what to do and when?			82
Munich Small Animal Series: Dogs with coagulopathy - intoxications, genetic defects, parasites ...		88	
Munich Small Animal Series: What's new in cardiac therapy?			76
Neuropathology Online Tutorial		119	15
Neuropathology Journal Club	5	7	7
Neuropathology Rounds	15	14	9



New and old coronaviruses in cats "SARS and FIP" - News on occurrence and therapy	490		
Nutrition for cats - commercial food, BARF or home cooking?	98		
Pathology and Histopathology of Fish	40		7
Pathology Journal Club / Wednesday Slide Conference JPC	13	12	12
Pododermatitis - from a minor evil to a nightmare	248		
Polyuria/polydipsia from simple to complex - a guide to diagnostic work-up	325		
Tetanus in dogs - prophylaxis, therapy and prognosis	139		
Urinary incontinence - possibilities of diagnosis and therapy in internal medicine patients	142		
Why is ectoparasite prophylaxis so important and how do I do it properly?	120		

*cancelled due to the pandemic

10.4 Research-based education and QA on postgraduate education programmes

10.4.1 Contribution of research activities to research-based education

Current research results are incorporated into teaching materials wherever considered relevant for this purpose by the individual tutor. Students further are exposed either directly or via doctoral students and staff to research projects and their outcome when being confronted with cases and disorders and when opting for research internships and elective courses. In general, the students have access to all research areas of the Faculty of Veterinary Medicine or featured by proxy in collaborating centres (e.g. at the medical faculty). Hence, students can pursue and deepen their access to research fields of their interest parallel to their basic education stream. Scientific colloquia are held weekly to monthly, which are attended by the entire staff including postgraduate students as well as students currently at the Institute or Clinic.

Undergraduate students were formerly assigned to research projects (VETResearch) as part of their extramural work experience. Due to funding cuts this program was discontinued by the LMU, currently the Faculty is in search of new funding. QA on postgraduate education is assessed by regular (bi-monthly) colloquia.

Current research results are incorporated into teaching materials, at locations where considered adequate. Students can also choose elective scientific based courses and there are elective journal clubs where new papers or publications will also be discussed.

Research-based knowledge

The results and experiences of research projects are generally incorporated into lectures and electives.

In clinics, postgraduate doctoral students are involved in clinical studies. When patients for those clinical studies come for consultations or procedures, the students can participate and those patients and of course the details of the studies are discussed in patient rounds, where students get explained why those studies are conducted, what the aim of those studies is, how in detail they are conducted and where the problems and limitations are.

Students doing their practical courses at the Institute for Molecular Animal Breeding and Biotechnology are offered a "Mini-Project" within our research focus in the fields of



reproductive biology and translational animal models. They present the project and results during our weekly meeting.

Electives for research methodology and presentation of current research projects

Postgraduate students have regular meetings with their mentors, more often initially and after gathering clinical data, less often after the protocol is established and before date collection is completed. In those meetings study hypotheses, protocols, statistical methods etc. are discussed and finalised. In addition, there is once annually a two-day seminar for postgraduate students of the whole faculty, organised by the Centre for Clinical Veterinary Medicine, in which general lectures about manuscript writing, lecturing, power point presentations, statistics, communication, paper review, teaching and other relevant topics are given. Furthermore, there are additional presentations and lectures offered by other institutions of the Faculty of Veterinary Medicine and the LMU Munich in basic science and for improving academic qualities. Besides incorporating research results in the coursework and discussions with the students, the Institute for Fish Diseases and Biology offers an elective course "Research in Aquatic Animal Veterinary Medicine" and offers students opportunities to participate in active research projects conducted at the institutes.

Research methods, such as stable climate measurement or "Fundamentals of Applied Ethology" are taught in elective courses. Within the optional course "Ethology and Animal Welfare", doctoral students present their dissertation projects (focus on animals, materials and methods) at irregular intervals.

The Institute for Animal Nutrition and Dietetics offers an elective that includes a presentation on current topics in equine nutrition given to students, veterinarians and horse owners. Students learn about important new research findings and experience the transfer of research findings into practical recommendations for vets and owners.

The Institute of Pharmacology, Toxicology and Pharmacy offers practical courses for students in experimental pharmacology to gain insight into current research in clinical experimental pharmacology, toxicology and pharmacovigilance.

At the Institute of Food Safety, scientific colloquia are held monthly and attended by the entire staff including postgraduate students as well as students currently at the Institute for practical training in hygiene control and food control. During this practical training one day is reserved for the presentation of research projects.

In the equine clinic, postgraduate doctoral students are involved in clinical studies. When patients for those clinical studies come for consultations or procedures the students can participate. The topics of the studies are frequently discussed in rounds, journal clubs and lab meetings.

The elective courses offered by the Institute for Molecular Animal Breeding and Biotechnology cover current research projects; most recent publications and their impact for veterinary medicine are regularly discussed.

Involving students in conferences

The Chair for Animal Welfare, Ethology, Animal Hygiene and Animal Husbandry offers participation in several conferences (DVG Ethology Conference Freiburg and DVG Animal Protection Conference Munich) as a compulsory elective subject for a maximum of 30 participants. Here, the students get a direct insight into the current research.

The equine clinic organises seminars for veterinarians as well as horse owners and breeders. Students are welcome to participate at these events.

Students were offered free access to the IXA2019 Meeting organised by the Chair for Molecular Animal Breeding and Biotechnology at the LMU Munich to get insight into the most recent developments of xenotransplantation.



10.5 Comments on Standard 10

Participation in veterinary continuous education is obligatory in Germany and there is a plethora of courses and seminars offered. They cover the whole field of veterinary medicine. The focus of continuous education offered by the Faculty of Veterinary Medicine/LMU Munich concentrates on evidence-based medicine.

11. ESEVT Indicators

The number of admitted students is calculated by the so-called capacity calculation (Kapazitätsrechnung): the available hours of teaching per year, based on the staff of the Faculty (Lehrkapazität), is divided by the so-called CNW factor (Curricularnormwert), which is calculated on the basis of available facilities. For each course the number of seats in lecture halls and the number of repetitions is assembled. The final teaching capacity is therefore adjusted by staff and teaching facilities. By German law, this must be calculated annually in February so that the number of study places is set for the admission in September. Number of FTE academic staff involved in training in relation to admitted students is therefore pre-set. Addressing Covid19, clinical and non-clinical practical training partially had to be taught online according to LMU Munich regulations and can therefore vary during the last two academic years.

During the last academic year, the Clinic for Equines moved to the new site in Oberschleißheim and was subsequently closed for equine patients. The new site offers a brand-new equine clinic and is now opened to welcome patients under highly modern conditions.

During lockdown situation in Coronavirus pandemics some clinics were only allowed to offer an emergency service, therefore number of patients can differ compared to regular clinical operation. Regarding clinical teaching, numerous online learning resources (seminars, video tutorials, lectures etc.) were created and are always open to students on the e-learning platform moodle.

Due to distance between the Clinic for Ruminants and the City Campus many ruminants are currently not sent to the Institute for Veterinary Pathology. This will be resolved as soon as the Institute will move to Oberschleißheim allowing also private/commercial owners an easier transportation in terms of wider roads and closer connection to highways.

Suggestions for improvement on Indicators

Online teaching content was highly increased during Covid19, and students highly appreciated the new eLearning opportunities. Therefore, the Faculty will continue to use online learning to optimally complement veterinary training in the future.

To increase necropsy cases, local practitioners should get more information about the work of the Institute for Veterinary Pathology and easy ways to send carcasses. To address this, the Institute's homepage will be updated and more personal contact to practitioners will be cultivated. Active advertisement has already been started.

Name of the Establishment		Veterinary Faculty of the Ludwig-Maximilians-University (LMU) of Munich			
Date of the form filling:		11.04.2022			
Calculated Indicators from raw data		Establish- ment values	Median values ¹	Mini- mal values ²	Bal- ance ³
I1	n° of FTE academic staff involved in veterinary training / n° of undergraduate students	0.115	0.15	0.13	-0.011
I2	veterinarians involved in veterinary training / n° of students graduating annually	0.808	0.84	0.63	0.178
I3	n° of FTE support staff involved in veterinary training / n° of students graduating annually	1.225	0.88	0.54	0.685



I4	n° of hours of practical (non-clinical) training	698.900	953.50	700.59	-1.690
I5	n° of hours of clinical training	773.867	941.58	704.80	69.067
I6	n° of hours of FSQ & VPH training	411.667	293.50	191.80	219.867
I7	n° of hours of extra-mural practical training in FSQ & VPH	263.333	75.00	31.80	231.533
I8	n° of companion animal patients seen intra-murally / n° of students graduating annually	50.629	62.31	43.58	7.049
I9	n° of ruminant and pig patients seen intra-murally / n° of students graduating annually	5.577	2.49	0.89	4.687
I10	n° of equine patients seen intra-murally / n° of students graduating annually	1.982	4.16	1.53	0.452
I11	n° of rabbit, rodent, bird and exotic seen intra-murally / n° of students graduating annually	12.569	3.11	1.16	11.409
I12	n° of companion animal patients seen extra-murally / n° of students graduating annually	0.211	5.06	0.43	-0.219
I13	n° of individual ruminants and pig patients seen extra-murally / n° of students graduating annually	49.696	16.26	8.85	40.846
I14	n° of equine patients seen extra-murally / n° of students graduating annually	0.028	1.80	0.62	-0.592
I15	n° of visits to ruminant and pig herds / n° of students graduating annually	11.352	1.29	0.54	10.812
I16	n° of visits of poultry and farmed rabbit units / n° of students graduating annually	0.221	0.11	0.04	0.176
I17	n° of companion animal necropsies / n° of students graduating annually	1.304	2.11	1.40	-0.096
I18	n° of ruminant and pig necropsies / n° of students graduating annually	0.781	1.36	0.90	-0.119
I19	n° of equine necropsies / n° of students graduating annually	0.184	0.18	0.10	0.084
I20	n° of rabbit, rodent, bird and exotic pet necropsies / n° of students graduating annually	2.599	2.65	0.88	1.719
I21 *	n° of FTE specialised veterinarians involved in veterinary training / n° of students graduating annually	0.396	0.27	0.06	0.336
I22 *	n° of PhD graduating annually / n° of students graduating annually	0.428	0.15	0.07	0.358

1 Median values defined by data from Establishments with Accreditation/Approval status in May 2019

2 Recommended minimal values calculated as the 20th percentile of data from Establishments with Accreditation/Approval status in May 2019

3 A negative balance indicates that the Indicator is below the recommended minimal value

** Indicators used only for statistical purpose*

AdH	Individual selection procedure of the universities (<i>Auswahlverfahren der Hochschulen</i>)
BayHSchG	Bavarian Higher Education Act
BMBF	Federal Ministry for Education and Research (<i>Bundesministerium für Bildung und Forschung</i>)
BMEL	Federal Ministry of Nutrition and Agriculture (<i>Bundesministerium für Ernährung und Landwirtschaft</i>)
BSB	Bavarian State Library (<i>Bayerische Staatsbibliothek München</i>)
BTO	Federal Laws applying to veterinary medicine (<i>Bundestierärzteordnung</i>)
CCVM	Centre for Clinical Veterinary Medicine
CiMM	Centre for Innovative Medical Models
CLPM	Center for Leadership and People Management
CUA	Central University Administration
DFG	German Research Foundation (<i>Deutsche Forschungsgemeinschaft</i>)
DoSV	Dialogue-oriented service procedures (<i>Dialogorientierte Serviceverfahren</i>)
DVG	German Veterinary Society (<i>Deutsche Veterinärmedizinische Gesellschaft</i>)
EBVS	European Board of Veterinary Specialisation
EC	Ethics Committee
ECTS	European Credit Transfer and Accumulation System
EEA	Agreement on the European Economic Area
EEC	European Economic Community
EGLOH	European University Alliance for Global Health
EPT	External Practical Training
FSQ	Food Safety and Quality
FTE	Full-time equivalent
HACCP	Hazard Analysis Critical Control Point
ICON	Interfaculty Center for Endocrine and Cardiovascular Disease Network Modelling and Clinical Transfer
IVSA	International Veterinary Students' Association
JIF	Journal Impact Factor
KELDAT	Competence Center for E-Learning, Didactics and Training Research in Veterinary Medicine
LRZ	Leibnitz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities (<i>Leibniz-Rechenzentrum der Bayerischen Akademie der Wissenschaften</i>)
LVG	Livestock Centre Oberschleißheim (<i>Lehr- und Versuchsgut</i>)
OSCE	Objective structured clinical examination
OSH	Oberschleißheim
PStO	Study and Examination Rules (<i>Prüfungs- und Studienordnung</i>)
QA	Quality Assurance
SEMP	Swiss-European Mobility Programme
SfH	Foundation for University Admissions (<i>Stiftung für Hochschulzulassung</i>)
SOP	Standard Operating Procedures



TappV	Licensure Act for Veterinarians (<i>Verordnung zur Approbation von Tierärztinnen und Tierärzten</i>)
TUB	Library of the Technical University of Munich (<i>Bibliothek der Technischen Universität München</i>)
UB	University Library (<i>Universitätsbibliothek München</i>)
UCAN	The Umbrella Consortium for Assessment Networks
VAT	Value added tax
VPH	Veterinary Public Health
VPN	Virtual private network
VTH	Veterinary Teaching Hospital
ZEQ	Additional Aptitude Quota (<i>zusätzliche Eignungsquote</i>)



ACADEMIC STAFF IN 2021

APPRAISAL QUESTIONNAIRES FOR EPTs

BIOSAFETY MANUAL (*BIOSICHERHEITSHANDBUCH*)

CLINICAL ROTATION (*KLINISCHE ROTATION*)

COUNTRY OF ORIGIN OF STUDENTS

COVID19 ADDENDUM

LIST OF ELECTIVE COURSES IN THE CURRENT ACADEMIC YEAR 2021/2022 (*WAHLPFLICHT-FÄCHER WPFs*)

LIST OF MAJOR FUNDED RESEARCH PROGRAMMES (*FINANZIERTE FORSCHUNGSPROGRAMME*)

LOGBOOK

MAPS (*LAGEPLÄNE*)

ORDINANCE OF VETERINARY CERTIFICATION (*VERORDNUNG ZUR APPROBATION VON TIERÄRZTINNEN UND TIERÄRZTEN, TAPPV*)

RESEARCH REPORT

PROFESSIONAL CODE FOR VETERINARIANS IN BAVARIA (*BERUFSORDNUNG*)

PROGRAMME LEARNING OUTCOMES (*LERNZIELKATALOGE*)

STUDY AND EXAMINATION RULES (*PRÜFUNGS- UND STUDIENORDNUNG*)

STUDY GUIDE (*STUDIENFÜHRER*)

TEACHER EVALUATION QUESTIONNAIRE (*LEHREVALUATION*)

UNITS OF STUDY OF THE CORE VETERINARY PROGRAMME

WRITTEN ASSESSMENT PROCEDURES FOR QA