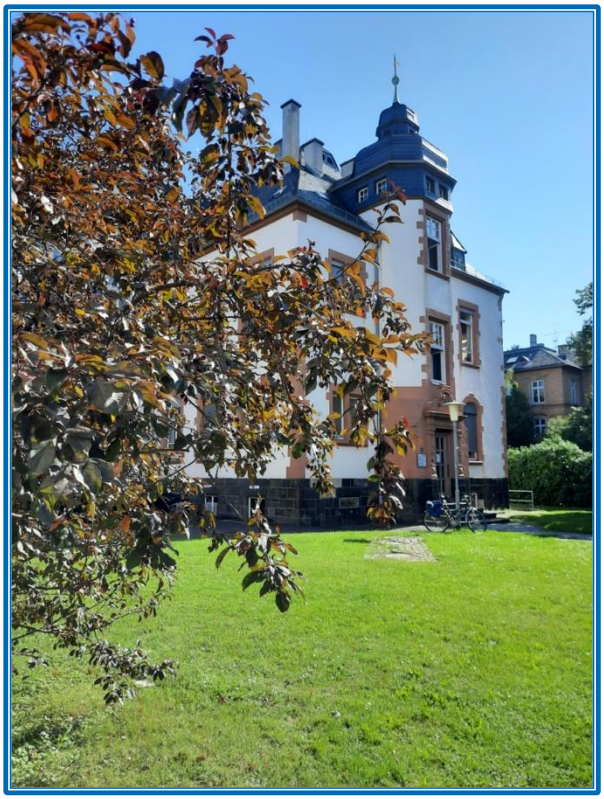
JUSTUS-LIEBIG-
UNIVERSITÄT
GIESSEN

ECTS-Catalogue

Veterinary Medicine Faculty



Contents

INTRODUCTION

This catalogue is not only to indicate the number of ECTS credit points for each of our courses, but also to ensure comparability and synchronization with other German and International Veterinary Educational Institutions regarding the content of the modules and the learning objectives.

The **ECTS (European Credit Transfer and Accumulation System)** is a credit system that guarantees full academic recognition of academic performance within Europe. The European Union has developed the ECTS to ensure that students will receive full accreditation of points (credits) for the courses they attend and the academic work they accomplish during a period of studying abroad. The system facilitates the assessment and comparison of learning outcomes. Furthermore, it allows the international transfer of credits between universities. Mutual trust and recognition of the participating universities are the fundamental principles of the ECTS. Further, new policies regarding the exchange of information (e.g. of the university calendar), the accreditation of the curriculum of each respective university and the allocation of ECTS credits which define the workload of other universities have been created and implemented to enhance this mutual trust. Within each department of the University of Giessen, ECTS credits are allocated to each and every course. In accordance with the guidelines of the ECTS, these credits reflect the workload of each course in proportion to the workload necessary for the successful completion of one full academic year. Within the ECTS, the credits amount to 60 annually, and accordingly a single semester is given about 30 credits.

For further information, students are welcome to contact the **ECTS Faculty Coordinator (Faculty of Veterinary Medicine)**:

Katrin Ziegenberg
Frankfurter Str. 94
35392 Giessen
Tel: +49 (641) 99 38007
Katrin.Ziegenberg@vetmed.uni-giessen.de

We would like to point out that all of the courses listed in the ECTS catalogue are regular courses and will also be attended by the students of Giessen University. Please note that no special courses will be held for ECTS purposes. Credits will only be awarded if the student has attended the complete course for the full semester and has met all further requirements.

General Information

Contact and Facilities

Office for Study Affairs

Katrin Ziegenberg (ERASMUS Faculty Coordinator)
Dr. Meike Kuhlmann
Dr. Birte Pfeiffer-Morhenn (Clinical Rotaion, Clinical Skills Lab - PETS)
Frankfurter Str. 94
Tel. +49 (641) 99-38007/-38008
Office hours: Mon, Tue, Thu 9.00 a.m. -12 a.m.
Katrin.Ziegenberg@vetmed.uni-giessen.de
Meike.M.Kuhlmann@vetmed.uni-giessen.de
Birte.Pfeiffer-Morhenn@vetmed.uni-giessen.de

Student Advisory Service
Student body Veterinary Medicine

Office hours: during term time
Mon-Fri 1.00 p.m.-2.00 p.m., Wed 8.00 p.m.
Frankfurter Str. 120, above the smithy
Tel. +49 (0641) 99-38010
Fachschaft.Tiermedizin@vetmed.uni-giessen.de

Advisory Service and support for foreign students and applicants

Patrycja Zakrzewska
Saltanat Langohr
International Office
Goethestr. 58
Tel. +49 (0641) 99-12143
studium-international@uni-giessen.de
https://www.uni-giessen.de/internationales/studierenjlu/index

BAföG (Bundesausbildungsförderungsgesetz)

Prof. Dr. Rolf Bauerfeind
Inst. f. Hygiene u. Infektionskrankheiten der Tiere
Frankfurter Str. 85-89
Tel. +49 (0641) 99-38303
Rolf.Bauerfeind@vetmed.uni-giessen.de

Representiative

Prof. Dr. Christoph Grevelding
Christoph.Grevelding@vetmed.uni-giessen.de

Doctorate

Legal basis: Promotionsordnung, please refer to the following website

http://www.uni-giessen.de/cms/mug/7/findex4.html

Head of the Examination Board (Doctorates)
Dean of the Faculty of Veterinary Medicine

Sabine Baloditis

Frankfurter Str. 94

Tel. (0641) 99-38002

Sprechzeiten: Mo bis Do 9.00 - 12.00 Uhr

Ph.D. – Doctor of Philosophy

Legal basis: Ph.D – Ordnung, please refer to the following website:

http://www.uni-giessen.de/cms/mug/7/findex45.html

Deanary

Frankfurter Straße 94

Tel. +49 (0641) 99-38000/-38001, Fax +49 (0641) 99-38009

Dekanat@fb10.uni-giessen.de

Dean

Prof. Dr. Dr. h.c. Martin Kramer

Martin.Kramer@vetmed.uni-giessen.de

Vice Dean

Prof. Dr. Martin Diener

Martin.Diener@vetmed.uni-giessen.de

Dean for Study Affairs

Prof. Dr. Dr. Stefan Arnhold

Frankfurter Str. 94

Tel. +49(0641) 99 38100

Appointments by individual agreement

Stefan.Arnhold@vetmed.uni-giessen.de

Committee for the Veterinary Intermediate Examination and the Veterinary Medical Examination

Frankfurter Str. 94

Tel. (0641) 99-24540/-24543

https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/pruefamt

Head (Veterinary Intermediate Examination)

Prof. Dr. Carsten Staszyk
Institut für Veterinär-Anatomie
Frankfurter Str. 98,
Tel. +49 (0641) 99-38102/-38101 (Sekretariat)
Carsten.Staszyk@vetmed.uni-giessen.de

Head (Veterinary Medical Examination)

Prof. Dr. Andreas Moritz
Klinik für Kleintiere
Frankfurter Str. 126
Tel. +49 (0641) 99-31600/-31601 (Sekretariat)
Andreas.Moritz@vetmed.uni-giessen.de

CLINICS AND INSTITUTES

Institute for Veterinary Anatomy, Histology and Embryology

Frankfurter Str. 98
Phone: ++49 (641) 99-38101

Institute for Veterinary Physiology and Biochemistry

Frankfurter Str. 100
Phone: ++49 (641) 99-38151

Institute for Hygiene and Infectious Diseases of Animals

Frankfurter Str. 85-89
Phone: ++49 (641) 99-38301

Institute for Veterinary Food Science

Frankfurter Str. 92
Phone: ++49 (641) 99-38251

Institute for Veterinary Food Science -

Professorship for Dairy Science
Ludwigstr. 21b
Phone: ++49 (641) 99-38951

Institute for Veterinary-Pathology

Frankfurter Str. 96
Phone: ++49 (641) 99-38201

Institute for Parasitology
Schubertstr. 81
Phone: ++49 (641) 99-38461

Professorship for Animal Welfare and Ethology
Frankfurter Str. 110
Phone: ++49 (641) 99-38751

Institute for Pharmacology and Toxicology
Schubertstr. 81
Phone: ++49 (641) 99-38401

Institute for Virology
Schubertstr. 81
Phone: ++49 (641) 99-38351

Clinic for Small Animals (Internal Medicine and Surgery)
Frankfurter Str. 114
Phone: ++49 (641) 99-31601/-31501

Clinic for Reproduction with veterinary ambulance
Frankfurter Str. 106
Phone: ++49(641) 99-38695

Clinic of Bird, Reptile, Amphibian and Fish Medicine
Frankfurter Str. 114
Phone: ++49 (641) 99-38431

Clinic for Horses
(Internal Medicine and Surgery)
Frankfurter Str. 126 + 108
Phone: ++49 (641) 99-38570/-38650

Clinic for Farm Animals (Swine and Ruminants)
(Internal Medicine and Surgery)
Frankfurter Str. 110 u. 112
Phone: ++49 (641) 99-388671/38824

Unit for Biomathematics and Data Processing
Frankfurter Straße 95
Phone: ++49 (641) 99-38800

Institute for Animal Nutrition and
Nutrition Physiology [FB 09]
Heinrich-Buff-Ring (IFZ)
Phone: ++49 (641) 99-39230/-39231

Institute for Animal Breeding and Genetics [FB 09]
Ludwigstraße 21 b
Phone: ++49 (641) 99-37621

Clinical Skills Lab – PETS
Frankfurter Straße 110
Phone: ++49 (641) 99-38014

1. The following information relates to section 1, § 1 of the Veterinary Approbation Regulation (TAppV).
The study of Veterinary Medicine comprises:

1. a Scientific-theoretical part taught throughout a period of four and a half years, with a total of 3850 hours (these may not be exceeded) of compulsory and elective courses, for the study of the fundamentals of Veterinary Medicine, at any university or equivalent institute of higher education, with regard to later use in veterinary practice.

2. a Practical part consisting of 1170 hours.

- 70 hours (generally, a period of two weeks) in Agriculture, Animal Breeding and Animal Husbandry (after the 1st semester, at the study and research facility Oberer Hardthof)
- 150 hours (generally, a period of four weeks) in a veterinarian practice or clinic (after the 6th semester)
- 75 hours (generally, a period of two weeks) in Hygiene Control and Food Control/Investigation (extramural during the clinical rotation)
- 100 hours (generally, a period of three weeks) in Ante and Post mortem Meat Inspection and Quality Control (extramural during the clinical rotation)
- 75 hours (generally, a period of two weeks) in Veterinary Public Health Service (extramural in the clinical rotation)
- 700 hours (generally, a period of 16 weeks) in a veterinary practice, clinic or in an internship of choice (extramural during the clinical rotation). The 9th and 10th semester comprise the clinical rotation: 25 groups of approximately 8 students each rotate through individual clinics and institutes of the university (intramural rotation):
    - Clinic of equine medicine (internal medicine and surgery): 4 weeks
    - Clinic for small animals (internal medicine and surgery): 4 weeks
    - Clinic for farm animals (ruminants): 2 weeks
    - Clinic for reproduction: 4 weeks
    - Clinic for bird, reptile, amphibian and fish medicine: 2 weeks
    - Clinic for farm animals (swine): 2 weeks
    - Pathology/Virology/Bacteriology: 2 weeks

3. the following examinations:

The Veterinary Intermediate Examination (Tierärztliche Vorprüfung):

The Veterinary Pre-Intermediate Examination (Vorphysikum) after the 2nd semester (in Botany of Feed Crop, Poisonous and Medicinal Plants, Zoology, Chemistry and Physics including fundamental knowledge concerning physical radiation protection), followed by the Veterinary Intermediate Examination (Physikum) after the 3rd semester (in Anatomy, Histology and

Embryology) and after the 4th semester (in Animal Breeding and Genetics, including Animal Assessment, Physiology, Biochemistry),

The Veterinary Medical Examination (German Veterinary Licensing Examination = Staatsexamen, Tierärztliche Prüfung):

The examination begins with the first exams after the 5th semester and ends with the final examinations after the 11th semester:

- after the 5th semester in: Virology (written), Bacteriology and Mycology (oral/practical); Clinical Propaedeutics (oral/practical) General Pharmacology and Toxicology (written), General Pathology (written)
- after the 6th semester in: Animal Husbandry and Animal Hygiene (oral), Parasitology (oral/practical), Pharmaceutical and Drug Prohibition Law (oral/practical), Animal Nutrition (written) as well as parts of the exams in: Internal Medicine, Surgery and Reproductive Medicine (written)
- after the 7th semester in: Animal Welfare and Ethology (written), Dairy Science (written), Radiology (written), as well as parts of the exams in: Internal Medicine, Surgery and Reproductive Medicine (written)
- after the 8th semester in: Specific Pharmacology (oral), Combating Epizootic and Infectious Disease (oral), Forensic Medicine/Professional and Ethical Law (written), as well as parts of the exams in: Internal Medicine, Surgery and Reproductive Medicine (written)
- during the 11th semester in: General and Specific Pathology, Pathological Anatomy and Histology (oral/practical), Meat Hygiene (oral/practical/written), Food Science, including Food Hygiene (oral/practical/written), Poultry Diseases (oral/practical) and parts of the exams in Internal Medicine, Surgery and Reproductive Medicine (written).

For each semester, syllabi and timetables will be published timely before the start of the courses. Here students can find information about lectures, tutorials, and seminars; rooms and locations; and instructors and teachers. These are available online at:

http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/studium

Allocation into practical groups is centralised and can be accessed online via Stud-IP:

https://studip.uni-giessen.de

Further information on the curriculum can be found in the Veterinary Approbation Regulation (TAppV) and the Study and Assessments regulation of 2007 of the JLU Giessen (StuPOVet).

https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/Gesetze

EVALUATION

The evaluation of the academic performance at the Faculty of Veterinary Medicine, JLU-Giessen (TappV § 14) consists of the following grades:

VERY GOOD (1)
an excellent performance

GOOD (2)
a performance that exceeds average requirements significantly

SATISFACTORY (3)
a performance that fulfills the average requirements in every respect

SUFFICIENT (4)
a performance that despite its deficiencies still meets the requirements

FAIL (5)
a result that because of its deficiencies does not meet the requirements

Rating within the ECTS-system is according to the following evaluation scale (§ 15 StuPO Vet):

Grade	Grade span	Definition	Definition (German)
A	1,0 - 1,5	Excellent	Hervorragend
B	1,5 - 2,0	Very good	Sehr gut
C	2,1 - 3,0	Good	Gut
D	3,1 - 3,5	Satisfactory	Befriedigend
E	3,6 - 4,0	Sufficient	Ausreichend
FX/F	4,1 - 5,0	Fail	Nicht bestanden

The Department will, on request of the student, add a testimony on results alongside the reference. This includes a rating system based upon the ranking of successfully examined students in the current year and the two previous years.

SEMESTERWOCHENSTUNDE (SWS) = CONTACT HOUR PER WEEK (CHW)

One contact hour per week (CHW) is calculated based on the number of hours per course (each 45 min.) in a semester divided by the number of weeks in the semester. If a one hour course is given once weekly, the course has an amount of 1 CHW. There will be no differentiation between a winter semester (15 week lecture period) and a summer semester (14 week lecture period); a semester is always calculated with 14 weeks.

COURSE TYPES

There are different types of courses, which differ in structure and in the degree of commitment they require. The course types are: Lecture (L) (Vorlesung), Seminar (S), Practical (P) (Übung) or Animal Handling (AH) (Übung am Tier). These courses are defined as follows in the appendix of Kapazitätsverordnung (KapVO; Gesetz- und Verordnungsblatt for Land Hessen from the 29.12.1975 and 10. 01.1994):

L:

Lecture (course type A, k = 1 of the Kapazitätsverordnung of 29/12/1975; unlimited group size) provides and mediates basic scientific and specific knowledge. The instructor speaks and the students act predominantly receptive.

S:

In seminars (course type B, k = 4 of the Kapazitätsverordnung of 29/12/1975; group size n = 30), the instructor directs the course, provides tasks, monitors the activities of students and chairs discussions. Students practise skills and methods, hold presentations, discuss topics or solve exercises.

P:

In practicals (course type D, k = 7 of the Kapazitätsverordnung of 29/12/1975; group size n = 15), skills and knowledge are conveyed by solving practical and experimental tasks. The instructor directs and supervises students during the course. Students accomplish practical work and experiments.

AH:

In a tutorial with animals / animal handling (course type F, k = 12 of the Kapazitätsverordnung of 29/12/1975; group n = 5) medical expertise is systematically explained. Students learn to diagnose conditions and diseases and to propose treatments. The instructor observes and directs the students; the students employ the acquired skills and knowledge.

COMMITMENT TOWARD LECTURES

Compulsory courses (CC) (Pflichtveranstaltungen):

Courses that require continuous and successful participation according to the TAppV (seminar and practicals). Lectures do not have compulsory attendance. Regular participation means: presence during at least 85% of the course. This means that courses with 1 contact hour per week (1 CHW) allow a maximum absence of 2 hours.

Elective courses (EC) (Wahlpflichtveranstaltungen):

Courses in which students must provide a certificate for a particular study section with a minimum number of hours in these particular courses. Students are be able to choose between various topics. Attestation is given in CHW.
One ECTS contact hour per week has a credit point value of 1. There is no set number of elective courses in a semester, because ECs can be chosen freely by the students.

DAY ONE COMPETENCES

Veterinary faculties should prepare students to master entry-level veterinary care. At the European level, the European Association of Establishments for Veterinary Education (EAEVE) has formulated so-called “Day One Competences” (DOC), i.e. skills that graduates should master after completing their veterinary studies (EAEVE, 2019). The DOC catalog is shown in the appendix. The ECTS catalog therefore not only shows the learning objectives of the individual courses - the DOC to be achieved for the courses are also defined via footnotes.

SEMESTER SURVEY

1ST SEMESTER

COURSES	CHW	ECTS
Anatomy L	3	3
Anatomy P	4	5
Botany L	2	2
Chemistry L	4	4
Terminology L	2	3
Professional Studies: Communication and Ethics	1	1
Cytology/Histology L	2	2
Physics L/P	4	5
Animal Husbandry L	2	2
Zoology L (including one seminar)	4	4
Elective courses		
PRACTICAL		
Agriculture, Animal Breeding and Animal Husbandry (two weeks)		4

L= lecture, P= practical, S=seminar
CHW = contact hour per week (Semesterwochenstunde)
ECTS = European Credit Transfer and Accumulation System, Indication of Credit Points

Please note: further information regarding courses can be found at:
http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/studium

ANATOMY I [1]

Coordinator:
Arnhold

Instructors:
Arnhold / Staszyk / Wenisch / Kressin / Fietz

Course Type:
lecture (3 CHW) + practical (4 CHW)

ECTS:
lecture: 3, practical: 5

Introduction:
Anatomy of the Locomotor System: bones, joints and muscles of the body, including blood vessels and nerves of the extremities.

Overall aims and objectives:
Students should be able to:

- describe bones, joints and muscles in domestic mammals and explain differences between the various species
- reproduce and illustrate the course of nerves and blood vessels of the forelimb and hindlimb
- apply the knowledge acquired to the preparation of the object itself

Reading list:
- Nickel, Schummer, Seiferle, Lehrbuch der Anatomie der Haustiere, Herausgeber: Parey Bei Mvs, 1. Edition (1997), ISBN-13: 978-3830440178
- König/Liebig: Anatomie der Haussäugetiere: Lehrbuch und Farbatlas für Studium und Praxis, Herausgeber: Schattauer, 4. Edition (2008), ISBN-13: 978-3794526505

Scripts:
lecture notes

Electronic sources:
see ILIAS:
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

[1] 1.28

Learning recommendations:
see literature, scripts

Assessment:
three oral exams during the semester and one oral exam after the third semester within the framework of the Veterinary Intermediate Examination in “Anatomy”

BOTANY

Coordinator:
Wissemann

Instructors:
Wissemann

Course type:
lecture (2 CHW)

ECTS:
2

Introduction:
The course “Introduction to Botany” presents the topics of Botany in its full extent tailored to the needs and requirements of the veterinarian profession. Commencing with mechanisms of diversification, such as co-evolution, evolution factors and speciation, reproductive survival strategies (metabolism in the broader sense, photosynthesis, hydration, metabolisms and the basic organs involved in those (sprout, leaf, root)), the variety of flora will be outlined and explained as a result of adaptation to conditions of terrestrial life through natural selection, and, in the case of the evolution of crop plants, through anthropogenic selection.

Overall aims and objectives:
Students should be able to:

- trace the evolution of the plant world
- deduce basic processes that lead to the diversification of the plant world
- employ knowledge of processes and be able to transfer the meaning and occurrence of poisons to an evolutionary biological context

Reading list:

- Raven, Evert, Eichhorn, Biologie der Pflanzen: 4. Verlag: Gruyter; 4. Auflage (22. August 2006), ISBN-10: 3110185318, ISBN-13: 978-3110185317

- Wagenitz, Gerhard: Wörterbuch der Botanik (Sav Biologie), Herausgeber: Spektrum Akademischer Verlag, 2. Edition (2003), ISBN-13: 978-3827413987

Scripts:
electronic scripts will be supplied

Learning recommendations:
reading, reading, reading...

Assessment:
a written exam within the framework of the Veterinary Pre-Intermediate Examination in "Botany" after the second semester

CHEMISTRY

Coordinators:
Göttlich/Maaß/Spengler

Instructors:
Göttlich / Maaß

Course type:
lecture (4 CHW)

ECTS:
4

Introduction:
- atomic and molecular structures, periodic table, elements of nature, introduction to specific s- and p-block elements, chemical bonding, chemical equations, stoichiometry
- substance properties, chemical bond, mixtures, osmoses
- acid-base reactions; buffer systems, pH-value
- redox reaction, redox potentials, electro chemistry
- chemical balance/ thermodynamic/ catalyze
- basic ideas of spectroscopy
- organic molecules: chemistry of functional groups and concerning basic reaction mechanisms, alkane, alkene, alkyne, halogen alkane, alcohol, amine, ether, aldehyde and ketene, carbon acids and attached derivates, arenes, selected natural resources (sugar, peptides, alkaloids, carbohydrates, nucleotides, steroids, vitamins)
- organic-chemical reaction mechanisms, basic ideas of stereo-chemistry

Overall aims and objectives:

Students should be able to:

- explain basic concepts of chemistry, such as the periodic table, formula language, semantics and stoichiometric calculations
- demonstrate the basic principles in inorganic (acids and bases, redox) and organic (functional groups) chemistry
- outline substance properties of specific elements and bonds of the periodic table
- document the basic principles of organic chemistry (functional groups, reactivity, nomenclature)
- demonstrate a profound basic knowledge of important chemical reactions in inorganic and organic chemistry

Reading list:

- Zeeck, Chemie für Mediziner, Herausgeber: Urban & Fischer Bei Elsevier; 5. Edition 2003), ISBN-13: 978-3437424410)
- Mortimer, Chemie, Herausgeber: Thieme, Stuttgart; 7. Edition (2001), ISBN-13: 978-3134843071

Electronic sources:

an electronic version of the lecture is currently available online:
https://studip.uni-giessen.de

Self-assessment:

exercises are available online; voluntary participation in additional tutorials is currently possible

Assessment:

- an exam at the end of the first semester which needs to be sat in order to qualify for the practical part in the second semester; if passed the grade will be taken into account for the practical exam
- a written exam within the framework of the Veterinary Pre-Intermediate Examination in “Chemistry” after the second semester

TERMINOLOGY

Coordinator:

Hospes

Instructor:

Hospes

Course type:
lecture (1 CHW) + practical (1 CHW)

ECTS:
3

Introduction:
An introduction to:

- the nature, application and history of medical terminology
- characteristics of anatomic and pathologic nomenclature, applied terminology, respectively parts and structuring of these terms
- the relevance of Greek and Latin including the influence of modern foreign languages

On the basis of linguistic content and terms which describe the construction, functions and diseases of the different organ systems, this will, with regard to the varieties of species, serve as an introduction to the complex fields of veterinary medicine.

Overall aims and objectives:
Students should be able to:

- define the parts of medical technical terms and explain their significance with the help of the acquired vocabulary and the terminological basics
- explain coherences that are specific to veterinary subjects and fields

Reading list:

- Pschyrembel Klinisches Wörterbuch, Verlag: Walter de Gruyter; 261 neu bearbeitete Edition (2007), ISBN-13: 978-3110185348
- Duden. Wörterbuch medizinischer Fach- begriffe, Herausgeber: Bibliographisches Institut, Mannheim; 8. überarbeitete und aktualisierte Edition (2007), ISBN-13: 978- 3411046188

Learning recommendations:
a revision of the content of the lecture, the literature and electronic sources recommended during the course

Assessment:
a written exam at the end of the first semester

PROFESSIONAL STUDIES: COMMUNICATION AND ETHICS [2]

Coordinators:
Dilly / Krämer / Tacke

Instructors:
Dilly / Krämer / Tacke

Course type:
Lecture (1 CHW)

ECTS:
1

Introduction:
Students get first insights into the veterinary profession as well as an introduction to animal welfare ethics. The lecture teaches the basics of veterinary communication (veterinarian-patient-owner relationship), discusses situations of the veterinary dilemma (e.g. killing vs. therapy) and discusses moral and ethical aspects of euthanasia. Furthermore, the students are familiarised with the foundations of euthanasia in terms of animal protection law. The focus is on the reflection of different problem areas in veterinary practice and the consideration of ethical perspectives in this context.

Overall aims and objectives:
Students should be able to:

- reproduce the basics of veterinary communication
- discuss moral-ethical aspects of killing animals
- reproduce the principles of the animal protection law on euthanasia

Reading list:
See lecture

Learning recommendations:
See lecture

[2] 1.1, 1.4, 1.7, 1.10, 1.32

CYTOLOGY/HISTOLOGY [3]

Coordinator:
Arnhold

Instructors:
Arnhold / Staszyk / Wenisch / Kressin / Fietz

Course type:
lecture (2 CHW)

ECTS:
2

Introduction:
histological technology and light microscopy, cell and tissue science (epithelial, connective and supporting tissue, muscles and nerves), microscopy of lymphatic organs

Overall aims and objectives:
Students should be able to:

- reproduce a basic idea of histological fixation and staining methods and of the physical principles of light microscopy
- define and explain the structure of the cell, its organelles and cell division
- recognise, draw and explain the tissue-specific structures
- recognise, draw and explain the lymphatic organs

Reading list:
- Liebich: Funktionelle Histologie der Haussäugetiere und Vögel, Publisher: Schattauer, 5th edition (2009), ISBN: 978-3-7945-2692-5
- Eurell/Frappier: Dellmann's Textbook of Veterinary Histology, Publisher: Wiley/Blackwell, 6th edition (2006), ISBN: 978-0-7817-4148-4
- Weyrauch/Smollich: Histologiekurs für Veterinärmediziner, Publisher: Enke (1998), ISBN-13: 978-3432295015

Electronic learning material:
see StudIP:
https://studip.uni-giessen.de/studip/
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

[3] 1.28

Learning recommendations:
see literature and teaching materials

Assessment:
a written exam during the second semester and an oral exam within the framework of the Veterinary Intermediate Examination in “Histology and Embryology” after the third semester

EXPERIMENTAL PHYSICS FOR VETERINARIANS

Coordinator:
Gutz

Instructors:
Lecturers in the physics department

Course type:
lecture (2 CHW) and practical (2 CHW)

ECTS:
5

Introduction:
- the fundamentals of mechanics, acoustics, thermodynamics, optics, electricity and magnetism
- energy and entropy
- aggregate states, chemical solutions, osmotic pressure, hydrostatics of liquids, gases, gaseous mixtures, diffusion
- structure of matter, of radiation and its interaction with the matter
- radiation protection and application of radiation in medicine
- functionality of diagnostic imaging techniques in medicine

Overall aims and objectives:
Students should be able to
- explain and apply the fundamental physical values, laws and methods
- understand simple problems in physics to which mathematical techniques were applied
- explain the physical fundamentals of measuring and diagnostic imaging methods in medicine
- evaluate medically relevant aspects of radiation physics and radiation protection

Reading list:

- W. Hellenthal, Physik für Mediziner und Biologen, Wiss. Verlagsgesellschaft Stuttgart, 8. neu bearbeitete Edition (2007), ISBN-13: 978-3804723115

Electronic sources:

see StudIP:
https://studip.uni-giessen.de/studip/

Scripts:

see StudIP:
https://studip.uni-giessen.de/studip/

Self-assessment:

see StudIP:
https://studip.uni-giessen.de/studip/

Assessment:

an exam during the first semester and an oral exam within the framework of the Veterinary Pre-Intermediate Examination in “Physics” after the second semester

ANIMAL HUSBANDRY [4]

Coordinator:

König

Instructors:

Engel, Lühken

Course type:

lecture (2 CHW)

ECTS:

2

Introduction:

This lecture will impart the ethical and economical requirements of animal husbandry, including legal parameters, basic husbandry methods and criteria for their evaluation, as well as the connection with cross compliance and the requirements of animal husbandry as compared to organic farming. Students learn about the respective husbandry methods for farm animals such

[4] 1.1, 1.10, 1.20

as cattle, pigs, sheep, goats, horses, poultry and rabbits, with regard to usage and production process, taking into account animal health and product quality, as well as husbandry methods for dogs, taking into account legal requirements.

Overall aims and objectives:

Students should be able to

- explain the legal parameters of animal husbandry concerning livestock and domestic animals
- describe methods of animal husbandry
- define and explain criteria concerning the evaluation of methods of animal husbandry
- asses negative effects of these methods on the health of animals
- evaluate the effects of these methods on the quality of the foodstuff obtained
- explain the requirements of organic farming in comparison with conventional farming

Reading list:

- Methling, W., Unshelm, J.: Umwelt- und tiergerechte Haltung von Nutz-, Heim- und Begleittieren, Herausgeber: Parey Bei Mvs; 1. Edition (2002), ISBN-13: 978-3830440000
- Hoy, S., Gauly, M., Krieter, J.: Nutztierhaltung und -hygiene, Herausgeber: UTB; 1. Edition (2006), ISBN-13: 978-3825228019

Electronic sources:

see StudIP:
https://studip.uni-giessen.de/studip/

Learning recommendations:

see literature mentioned above

Assessment:

an oral exam within the framework of the Veterinary Medical Examination in “Animal Husbandry and Hygiene” after the sixth semester

ZOOLOGY

Coordinator:

Manzini

Instructors:

Manzini, Westermann, Hassenklöver

Course type:
lecture and follow-up seminar (4 CHW)

ECTS:
4

Introduction:
The lecture series “Introduction to Zoology for veterinary students” is specially adapted to the study of veterinary medicine. Central aspects of the lecture are the essential systematic, anatomical and evolutionary aspects of the animal kingdom. Commencing with the animal cell, the diverse organisational levels of faunal construction plans will be dealt with, right through to mammals. Special regard is given to the evolutionary development of symbioses and parasitism; further the life cycles of host or intermediate host and symbiont/parasite will be explained.

Overall aims and objectives:
Students should be able to:

- explain the construction and division of animal cells
- explain the anatomy, physiology and position of organs in invertebrates and vertebrates
- outline the life cycles of symbionts and parasites and explain them within their evolutive contexts
- name morphologic and molecular aspects of the systematic classification of animals
- allocate animals to their ecological niches, based upon their anatomy and physiology

Reading list:

- Ahne, Liebich, Stohrer & Wolf (2000) Zoologie – Lehrbuch für Studierende der Veterinärmedizin und Agrarwissenschaften, Schattauer, F.K. Verlag (2000), ISBN-13: 978-3794517640
- Clauss & Clauss (2005) Zoologie für Tiermediziner, Enke-Verlag, Edition: 1 (2004), ISBN-13: 978-3830410379

Electronic sources
a script of the lecture will be uploaded to StudIP as learning aide (but not as a substitute for the literature mentioned above!)
See StudIP:
https://studip.uni-giessen.de/studip/

Self-assessment:
can be found in the book by Clauss and Clauss

Learning recommendations:
during the seminar, the students will be advised on learning methods concerning the special field of "Zoology"

Assessment:
written multiple-choice exam within the framework of the Veterinary Pre-Intermediate Examination in „Zoology "after the second semester

PRACTICAL IN AGRICULTURE, ANIMAL BREEDING AND ANIMAL HUSBANDRY [5]

Course duration:
14 days full time after the winter semester, at the "Lehr- und Forschungsstation Oberer Hardthof"

Coordinator:
König

Instructors:
Engel and assistants

Course type:
practical (2 Weeks)

ECTS:
4

Introduction:
The students will receive an introduction to the general structures of agriculture as well as to the upstream and downstream fields. They will get to know operational procedures and production factors of the various production facilities at the study and research station "Oberer Hardthof" and other agricultural facilities.

Overall aims and objectives:
Students should be able to:

- demonstrate knowledge of organisational structures of agriculture and farms
- explain production factors and procedures in farms with animal husbandry and the manufacturing of foodstuff
- discuss the economical importance of animal production

[5] 1.7, 1.28

Reading list:

- Weiß, J., Pabst, W., Strack, K.E., Granz, S.: Tierproduktion, Herausgeber: Parey Bei Mvs; 13. überarbeitete Edition (2005), ISBN-13: 978-3830441403

Maximum capacity:

50 students per course, 4 courses will be offered

Assessment:

students prepare protocols that will be graded after the course

2ND SEMESTER

COURSES	CHW	ECTS
Agricultural Science L	2	2
Anatomy II L	1	1.5
Anatomy II P	2	4
Biostatistics P	2	3
Botany P	2	4
Chemistry S/P	5	8
Embryology S	1	1
Ethology and Animal Welfare I L	2	2
Animal Nutritional Sciences L	1	1
Animal Nutritional Sciences P	2	3
Microscopic Organ Theory P	2	4
Elective Courses		
EXAMINATIONS		
Exam in Physics (including the fundamentals of physical radiation protection)		2
Exam in Chemistry		2
Exam in Zoology		2
Exam in Botany of feed crops, poisonous and medicinal plants		2

L= lecture, P= practicals, S= seminar
SWS (CHW)= Semesterwochenstunde (contact hour per week)
ECTS = European Credit Transfer and Accumulation System, Indication of Credit Points

Reference: Further information regarding Courses can be found under:
http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/studium

ANATOMY II [6]

Coordinator:
Arnhold

Instructors
Arnhold / Staszyk / Wenisch / Kressin / Fietz

Course type:
lecture (1 CHW) and practical (2 CHW)

ECTS:
lecture: 1.5; practical: 4

Introduction:
- Anatomy of the central nervous system (brain and spinal cord) and sensory organs.
- Anatomy of the head: oral and nasal cavity, pharynx, laryngeal; muscles, blood vessels, nerves and lymphatic glands

Overall aims and objectives:
Students will be able to:
- implement the material read by preparing it on the object and recognise and explain the correlation between structures and function
- recognise and explain differences between animal species

Reading list:
- Nickel, Schummer, Seiferle, Lehrbuch der Anatomie der Haustiere, Herausgeber: Parey Bei Mvs, 1. Edition (1997), ISBN-13: 978-3830440178
- König/Liebig: Anatomie der Haussäugetiere: Lehrbuch und Farbatlas für Studium und Praxis, Herausgeber: Schattauer, 4. Edition (2008), ISBN-13: 978-3794526505

Electronic sources
see StudIP and ILIAS:
https://studip.uni-giessen.de/studip/
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Scripts:
a script of the lecture will be available

[6] 1.28

Learning recommendations:
see the literature and sources mentioned above

Assessment:
two oral exams during the semester as well as one oral exam within the framework of the Veterinary Intermediate Examination in “Anatomy” after the third semester

BIOSTATICS

Coordinator:
Büttner

Instructors
Büttner

Course type:
practical (2 CHW)

ECTS:
3

Requirements:
prior knowledge of the fundamentals of mathematics as taught in school

Introduction:
The course is divided into four parts:

1. mathematical fundamentals of biostatistics
2. methods of descriptive statistics
3. elementary probability calculation
4. methods of analytical statistics

Overall aims and objectives:
Students should be able to:

- distinguish between the different types of statistics in relation to their scaling, and, dependent on these, apply the most important methods of descriptive statistics (especially statistic values of one- and two- dimensional statistics, medicinal statistical values, and graphic illustration)
- use the term of probability and apply it to simple veterinary problems. In particular, students will have realised that many procedures of veterinary medicine are of a stochastic rather than a deterministic nature

- use simple methods of analytical statistics to compare dependent and independent samples (Chi-Square-Test, t-Test, Wilcoxon-Mann-Whitney-Test, Wilcoxon-Test)
- explain statistic calculation formulae and acquire further knowledge of statistical methods with the help of an additional textbook

Reading list:

- Lorenz, R. J.: Grundbegriffe der Biometrie, 4. Edition, Gustav Fischer Verlag, Stuttgart, 1996
- Sachs, L.: Angewandte Statistik –Anwendung statistischer Methoden, Herausgeber: Springer-Verlag GmbH; 11. überarbeitete und aktualisierte Edition 2004 (2003), ISBN-13: 978-3540405559

Electronic learning material:

Based on the progress in the course material, the sample solutions of the practicals are published in StudIP.

Scripts:

the student working group Biomathematics and DV will provide a script on Biometrics

Learning recommendations:

The best way to prepare for the learning tests is to use the script in conjunction with your own practical notes and the sample solutions. It is also recommended to attend the accompanying biometrics seminar as an elective course.

Assessments:

Four multiple-choice exams during the semester. Alternatively, students can sit one oral exam, which will include all the subject matter covered by the tutorial, at the end of the semester

BOTANY [7]

Coordinator:

Wissemann

Instructors

Wissemann

Course type:

practical (2 CHW)

[7] 1.28

ECTS:
4

Requirements:
Participation in the basic lecture “Introduction to Botany”

Introduction:
Poisonous plants are numerous and widely spread in the central European flora. The conscious and unconscious introduction of foreign plants has recently increased the amount of poisonous plants in the flora surrounding us significantly, which has an enormous impact on cases of poisonings in animals. However: “Sola dosis facit venenum”, only the dosage determines whether something is poisonous or not. Therefore this course will introduce the fundamentals of applied plant classification. Besides poisonous plants, medicinal and forage plants will be defined, i.e. the botanical diversity of flora. At the end of the course students will be able to define plant species unknown to them and to acquire information concerning their toxicology.

Overall aims and objectives:
Students should be able to

- define unknown plant species and apply the knowledge acquired during the lecture concerning the structure, biology and function of plants to analyse and assess plant structures
- acquire information on plant toxicology
- deduce assertions concerning the possible toxicology of comparable plant species by using models known to them
- describe the diversity of the plant kingdom as well as its benefits and adverse effects
- allocate plants to the different classes of the plant system based on morphological and anatomical features

Reading list:

- Schmeil-Fitschen, Flora von Deutschland und angrenzender Länder, Herausgeber: Quelle & Meyer; 94. unveränderte Edition (2009), ISBN-13: 978-3494014685
- Roth, Daunderer, Kormann: Giftpflanzen, Pflanzengifte, Herausgeber: Nikol Verlags-GmbH; 5. erweiterte Auflage (2008), ISBN-13: 978-3868200096

Scripts:
a script of the lecture will be supplied in electronic form

Self-assessment:
self-assessment questions become redundant because a comparison between the plant at hand, classified by the student, and the illustration found in a standard reference book (e.g.

Haupler/Muer: Bildatlas der Farn- und Blütenpflanzen Deutschlands) will instantly reveal the level of knowledge the student has already acquired...

Learning recommendations:
practice, practice, practice...

Assessment:
a written exam within the framework of the Veterinary Pre-Intermediate Examination in "Botany of feed crops, poisonous and medicinal plants" after the second semester

PRACTICAL INTRODUCTION TO GENERAL CHEMISTRY [8]

Coordinator:
Göttlich/Maaß

Instructors:
assistants of the Department of Chemistry

Course type:
practical (3 CHW) and seminar (2 CHW) in small groups

ECTS:
8

Prerequisites:
basic knowledge of chemistry

Introduction:
- chemical parameters, concentrations and calculations
- acid and bases, pH-value, chemical balance
- titration, salts, buffer
- redox reactions, galvanic element, redox potentials
- Equilibrium constants, solubility products
- complex formations
- organic compound types, molecule models
- stereo chemistry of organic compounds
- isolation methods of organic bonds, chromatography
- analyses of organic compounds

[8] 1.28

- natural resources and macromolecules

Overall aims and objectives:

Students should be able to:

- demonstrate basic practical laboratory work competence with regard to good laboratory practice
- name chemical parameters and masses including the nomenclature
- demonstrate a general outline of the principles and procedures of redox reactions and acid-base reactions (including titration)
- demonstrate knowledge and skills in analysis of ions of inorganic and organic compounds
- discuss reaction kinetics and catalysis
- explain the structure of organic compounds

Recommended reading list:

Schindler, Göttlich; Chemisches Grundpraktikum im Nebenfach

Scripts:

currently supplied in printed form

Self-assessment:

exercises are available online at:

https://studip.uni-giessen.de

Assessment:

- a final exam at the end of the practical during the second semester
- a written exam within the framework of the Veterinary Pre-Intermediate Examination in "Chemistry" after the second semester

General Embryology [9]

Coordinator:

Arnhold

Instructors:

Arnhold and assistants

Course type:

seminar (1 CHW)

[9] 1.8

ECTS:

1

Introduction:

Predevelopment:

development and structure of gametes, sexual cycle, fertilization

Primitive development:

blastogenesis, germ leaf development, localization of primitive organs, development of cover and attachments

Placentation:

general placentation science, placentation of domestic mammals

Overall aims and objectives:

Students should be able to:

- define and explain the basic patterns of evolutionary theory and comparative aspects of the primitive development and the placentation of domestic mammals

Reading list:

- Schnorr/Kressin: Embryologie der Haustiere, Herausgeber: Enke; Edition: 5., neu bearbeitete Ausgabe (2006), ISBN-13: 978-3830410614
- Rüsse/Sinowatz: Lehrbuch der Embryologie der Haustiere, Herausgeber: Parey; ISBN-13: 978-3826332685

Electronic sources:

https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Learning recommendations:

see literature recommended above

Assessment:

an oral exam within the framework of the Veterinary Intermediate Examination in “Histology and Embryology” after the third semester

Ethology And Animal Welfare I [10]

Coordinator:
Krämer

Instructors:
Krämer, Kuhne, Hornung

Course type:
Lecture (2 CHW)

ECTS
2

Introduction:
introduction to animal welfare legislation and ethology

Overall aims and objectives:
The students should be able to:

- relate ethological knowledge of different animal species to legal principles and husbandry requirements and place the subject in the complex of veterinary medicine.

Reading list:
- "Kommentare zum Tierschutzgesetz", Hirtz, Maisack, Moritz, 2016

Scripts:
are created and made available as a PDF in StudIP
https://studip.uni-giessen.de

Assessment:
part of the animal welfare examination

Agricultural Science [11]

Coordinator:
FB09

[10] 1.1, 1.7, 1.10, 1.20
[11] 1.2, 1.7

Instructors:
Aurbacher, Ströde

Course type:
lecture (2 CHW), 1 excursion

ECTS:
2

Introduction:
The first part of the lecture will focus on agricultural livestock. Animal-orientated production processes will be illustrated. As a part of this, the illustration of animal species, the introduction to organisational structures, including methods of animal husbandry and the presentation of products (meat, milk, wool, etc) will be discussed. The efficiency of production methods will be presented. The syllabus will also include an introduction to legal regulations concerning animal husbandry in agriculture.

The second part of the lecture is part of the studies in functional business management and will deal with the fundamentals of business administration and applied business studies. This will include an introduction to the basic terminology of economics and accounting. The major topics included will be financial management, annual closure, balance-extraction calculation, gain-loss calculation and cash-basis accounting.
The students will get to know methods of cost-benefit calculation as well as investment calculation. The teaching unit practice management will centre on the veterinary surgery as a business model. It will provide an overview on the organisation and legal forms of the veterinary practice, including tariff and tax law and marketing methods.

Overall aims and objectives:
Students should be able to:

- define and explain the methods of livestock production in agriculture (organisational forms, husbandry methods, etc.)
- evaluate the efficiency of agricultural methods in livestock production
- define basic terms of business studies
- apply methods of controlling (e.g. accounting and finances)
- explain economic calculation methods (e.g. investment calculation)
- apply the methods of practice management

Reading list:

- Kuhlmann: Einführung in die Betriebswirtschaftslehre für den Agrar- und Ernährungsbereich

Electronic sources:

see StudIP:

https://studip.uni-giessen.de/studip/

Assessment:

The topic will be included in the oral exam taken within the framework of the Veterinary Intermediate Examination in “Animal breeding and Genetics including animal evaluation” after the fourth semester.

ANIMAL NUTRITIONAL SCIENCE [12]

Coordinator:

Ringseis

Instructors:

Ringseis

Course type:

lecture (1 CHW)

ECTS:

1

Introduction:

Definition of and introduction to animal nutritional sciences according to origin and usages.
The lecture will deal with the most important animal feed groups (green feed and preserve, straw, tubers and roots, grain and seeds, feed from industrial processing of plants, feed on microbial basis, feed of animal origin, feed lipids, catering waste and by-products of the baking industry, additives and extending ingredients) with regard to chemical (composition, nutritive and anti nutritive ingredients) and physical (structure) properties and applicability (usage recommendations) for mono gastric and ruminant animals.

- Important analyses of feed (Weender Analytics, Van Soest Analytics)
- Feed preservation and storage,
- Feed spoilage
- Feed assessment criteria
- Methods of feed production
- Feed safety and regulations
- The meaning of mixed feeding stuff

[12] 1.10, 1.20, 1.21

Overall aims and objectives:

Students should be able to:

- demonstrate knowledge of chemical and physical properties of animal feed including its production, conservation and storage
- demonstrate knowledge of the applicability of animal nutrition groups for feeding of agricultural livestock
- explain established laboratory methods used for the evaluation of feed
- demonstrate knowledge of the legal framework for the usage of feed and feed additives
- demonstrate knowledge of rationing regarding the aspect of fulfilment of demand and cost minimization

Reading list:

- Jeroch, H., Drochner, W., Simon, O.: Ernährung Landwirtschaftlicher Nutztiere; Ulmer-Verlag, Stuttgart 1999, ISBN 3-8252-8180-9
- Jeroch, H., Flachowsky, G., Weissbach, F.: Futtermittelkunde; Gustav-Fischer-Verlag Jena 1993, ISBN 3-334-00384-1

Electronic sources:

PowerPoint presentations

Learning recommendations:

We recommend studying the PowerPoint presentation before attending the lecture and acquiring further information concerning the subject matter with the help of the recommended books.

Assessment:

a written exam within the framework of the Veterinary Medical Examination in "Animal nutrition "after the sixth semester

PRACTICAL IN ANIMAL NUTRITIONAL SCIENCES [13]

Coordinator:

Eder

Instructors:

Eder and assistants

Course type:

practical (2 CHW)

[13] 1.8, 1.10, 1.20, 1.21, 1.28

ECTS:

3

Introduction:

The practical course will accompany the one-hour lecture in “Animal Nutritional Sciences”. Various types of animal feed will be examined with the help of the Weender-Analysis in order to identify nutrient and energy values. Aspects of the quality of the feed, the problematic issue of unwanted and banned supplements, as well as the differentiation of contamination and tampering will be demonstrated by experiments. The evaluation of green feed, straw and hay will be covered during a practical exercise. Microscopic assessments on starch, contamination and the occurrence of animal components in animal nutrition and mixture feeds will be conducted.

Overall aims and objectives:

Students should be able to

- provide knowledge on processing, preserving and storage of animal feed including relevant legal aspects of feed restrictions
- apply methods to evaluate and characterise animal feed

Reading list:

- Kamphues, J., Coenen, M., Iben, Chr., Kienzle, E., Pallauf, J., Simon, O., Wanner, M., Zentek, J.: Supplemente zu Vorlesungen und Tutorialen in der Tierernährung; 11. Auflage, Schaper Verlag Alfeld-Hannover 2009, ISBN 978-3-7944-0223-6
- Kirchgessner, M., Roth, F.X., Schwarz, F.J., Stangl, G.I.: Tierernährung; 12. Auflage, DLG-Verlag Frankfurt/Main 2008, ISBN 978-3-7690-0703-9

Electronic sources:

PowerPoint presentations

Scripts:

a script and further background information will be supplied via Stud-IP

https://studip.uni-giessen.de

Learning recommendations:

We recommend to prepare every practical session by reading the script and the background information and to engross the content of the practical subsequently.

Assessment:

written exam (TAppV preliminary TP certificates) within the framework of the Veterinary Medical Examination in “animal nutrition “after the sixth semester

MICROSCOPIC ORGAN TTHEORY I [14]

Coordinator:
Arnhold

Instructor:
Arnhold / Staszyk / Wenisch / Kressin / Fietz

Course type:
lecture and practical (2 CHW)

ECTS:
4

Introduction:
Microscopic anatomy of all organ systems discussed during the second semester in macroscopic anatomy: central nervous system, sensory organs, head

Overall aims and objectives:
Students should be able to:

- recognise organ-specific structures, represent them graphically and explain them
- Correlate microscopic and macroscopic anatomy

Reading list:

- Liebich: Funktionelle Histologie der Haussäugetiere und Vögel, Verlag: Schattauer, 5. Auflage (2009), ISBN: 978-3-7945-2692-5
- Eurell/Frappier: Dellmann's Textbook of Veterinary Histology, Verlag Wiley-Blackwell; 6. Edition (2007), ISBN-13: 978-0781741484
- Weyrauch/Smollich: Histologiekurs für Veterinärmediziner, Herausgeber: Enke (1998), ISBN-13: 978-3432295015

Electronic sources
see StudIP and ILIAS

https://studip.uni-giessen.de/studip/
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Learning recommendations:
see literature and sources indicated above

[14] 1.28

Assessment:

Oral examination as part of the Veterinary Medical Examination in "Animal Husbandry and Animal Hygiene" after the 6th semester

3RD SEMESTER

COURSES	CHW	ECTS
Anatomy III **L**	2	2
Anatomy III **P**	4	6
Biochemistry **L**	3	3
Ethology and Animal Welfare II	2	2
Microscopic Organ Theory II **P**	2	4
Physiology **L**	4	4
Animal breeding and genetics **L**	2	2
Elective Courses		
EXAMINATIONS		
Exam in Anatomy		2
Exam in Histology and Embryology		2

L= lecture, P= practicals, S= seminar
SWS (CHW)= Semesterwochenstunde (contact hour per week)
ECTS = European Credit Transfer and Accumulation System, Indication of Credit Points

Please note: further information regarding courses can be found at:
http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/studium

ANATOMY III [15]

Coordinator:
Arnhold

Instructor:
Arnhold / Staszyk / Wenisch / Kressin / Fietz

Course type:
lecture (2 CHW) + practical (4 CHW)

ECTS:
lecture: 2, practical: 6

Introduction:
anatomy of the skin including that of the mammary gland, the hoof and claw; of thoracic, abdominal and pelvic organs; furthermore avian anatomy

Overall aims and objectives:
Students should be able to:

- describe the position of the body cavity organs in situ
- explain the structure and function of the organs and demonstrate on specimens
- explain the structure of the skin and skin appendage organs and demonstrate on specimens
- name important differences between avian anatomy and the anatomy of domestic mammals, as well as implement the material heard in the lecture by dissection on the object

Reading list:
- Nickel/Schummer/Seiferle: Anatomie der Haustiere, Herausgeber: Parey Bei Mvs; 1. Auflage (1997), ISBN-13: 978-3830440178
- König/Liebig: Anatomie der Haussäugetiere, Herausgeber: Schattauer; 4. Edition (2008), ISBN-13: 978-3794526505

Electronic sources
see StudIP and ILIAS

https://studip.uni-giessen.de/studip/
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

[15] 1.28

Learning recommendations:
see the recommended literature and sources

Assessment:
three oral exams during the semester and one oral exam within the framework of the Veterinary Intermediate Examination in “Anatomy” after the third semester

BIOCHEMISTRY

Coordinator:
Mazurek

Instructor:
Mazurek, Scheiner-Bobis

Course type:
lecture (3 CHW)

ECTS:
3

Introduction:
The first part of this lecture on biochemistry will deal with:

- the biochemistry of the cell organelles
- properties and functions of proteins and enzymes
- reduction and biosynthesis of carbohydrates
- terminal oxidation of catabolites in the citrate cycle of lipid acids
- lipid and cholesterol metabolisms
- protein-turnover and cleansing of ammonium in the uric cycle
- the processes of oxygen and CO2 transport in the blood,
- the biosynthesis and degradation of porphyrins
- finally, the respiratory chain in ATP-production or thermogenesis in brown fat tissue of young and hibernating animals

Overall aims and objectives:
Students should be able to:

- describe the metabolic pathways discussed.
- establish connections between the discussed metabolic pathways and diseases.
- explain the relevance of metabolites and enzymes of these metabolic pathways for diagnostics

Reading list:
No special recommendation. All commercially available books on biochemistry.

Electronic sources:
see StudIP:
https://studip.uni-giessen.de/studip/

see ILIAS:
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Self-assessment:
Stud IP / ILIAS

Assessment:
an oral exam within the framework of the Veterinary Intermediate Examination in "Biochemistry" after the fourth semester

ETHOLOGY AND ANIMAL WELFARE II [16]

Coordinator:
Krämer

Instructors:
Krämer, Kuhne, Hornung

Course type:
Lecture (2 CHW)

ECTS
2

Introduction:
introduction to animal welfare legislation and ethology

Overall aims and objectives:
Students should be able to:

- relate ethological knowledge of different animal species to legal principles and husbandry requirements and classify the subject in the complex of veterinary medicine.

[16] 1.1, 1.7, 1.10, 1.20

Reading list:

- "Kommentare zum Tierschutzgesetz", Hirtz, Maisack, Moritz, 2016

Scripts:

are created and made available as PDF in StudIP

Assessment:

part of the exam "Ethology and Animal Welfare" after the seventh semester

MICROSCOPIC ORGAN THEORY II [17]

Coordinator:

Arnhold

Instructors:

Arnhold / Staszyk / Wenisch / Kressin / Fietz

Course type:

practical (2 CHW)

ECTS:

4

Introduction:

microscopic anatomy of the organ systems discussed during the third semester in macroscopic anatomy: skin, mammary gland, hoof, clutch and claw and organs of the thoracic, abdominal and pelvic cavities

Overall aims and objectives:

Students should be able to:

- recognise organ-specific structures, represent them graphically and explain them, as well as
- establish the link between macroscopic and microscopic anatomy and derive and list correlations between structure and function by linking macroscopic and microscopic anatomy

[17] 1.28

Reading list:

- Eurell/Frappier: Dellmann's Textbook of Veterinary Histology, Verlag Wiley-Blackwell; 6. Edition (2007), ISBN-13: 978-0781741484
- Weyrauch/Smollich: Histologiekurs für Veterinärmediziner, Herausgeber: Enke (1998), ISBN-13: 978-3432295015

Electronic sources:

see StudIP and ILIAS:

https://studip.uni-giessen.de/studip/
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Learning recommendations:

see recommended literature and sources

Assessment:

a written exam during the semester and an oral exam within the framework of the Veterinary Intermediate Examination in "Histology and Embryology" after the third semester

PHYSIOLOGY

Coordinator:

Diener, Gerstberger

Instructors:

Diener, Gerstberger, Pouokam, Roth, Rummel

Course type:

lecture (3 CHW) + additions to the lecture (1 CHW)

ECTS:

4

Introduction:

Physiologic fundamentals of important bodily functions in domestic animals (especially mammals) will be covered in this lecture of the 3rd semester (3 + 1 CHW). The following organ and functional systems will be dealt with in detail:

- fundamentals of cell physiology: transport systems, intracellular signal transduction
- neurophysiology; membrane potentials, excitation and transmission; neurotransmitters and receptors
- physiology of muscles; (supra-)spinal control of movement; proprio-receptors, pathophysiology

- the vegetative nervous system: sympathetic nervous system, parasympathetic nervous system and enteric nervous system
- physiology of senses: general basics; sensory modalities of skin; eye, hearing and vestibular organ; taste and smell; pathophysiology
- physicochemistry of blood, physicochemistry of erythrocytes; leucocytes; blood clotting; pathophysiology
- immunology: the system of cellular and humoral specific and unspecific defence
- cardiaovascular: excitation and mechanics of the heart; artery and venous system; microcirculation; peripheries and central circulatory regulation; pathophysiology
- physiology of kidney function: glomerular function; tubular resorption and secretion; hormonal control; acid and base management; pathophysiology
- salt and water regulation: fluid compartments; hypothalamic control

Overall aims and objectives:

Students should be able to:

- understand the physiology of single organ systems, including their cellular and biochemical fundamentals, as well as certain physical laws
- deduct and recognize integrative correlations: i.e. understand the cross-linking of organ systems by the superior control of the nervous system, the immune system and the endocrine system
- receive a first insight into cellular and systematic mechanisms of pathophysiological developments in animal organisms

Reading list:

- v. Engelhardt, Breves: Physiologie der Haustiere, Verlag: Enke; 3. vollständig überarbeitete Auflage 2010 (2009), ISBN-13: 978-3830410782
- Speckmann, Hescheler, Köhling: Physiologie, Urban & Fischer Verlag; 5. Auflage (2008), ISBN-13: 978-3437413186
- Klinke, Silbernagel: Lehrbuch der Physiologie, Verlag: Thieme, Stuttgart; 5. Auflage (2005), ISBN-13: 978-3137960058

Electronic sources:

see StudIP and ILIAS:

https://studip.uni-giessen.de/studip/
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Haschke, Diener (2007). Multimedia Physiologie – Ein interaktives Lernprogramm für Veterinärmediziner Version 3.2. Enke Verlag im MVS Medizinverlag, Stuttgart

Scripts:
An extensive script containing numerous slides of the lecture can be bought at the beginning of the semester.

Self-assessments:
Haschke, Diener (2007). Multimedia Physiologie – Ein interaktives Lernprogramm für Veterinärmediziner Version 3.2. Enke Verlag im MVS Medizinverlag, Stuttgart

Learning recommendations:
see the preceding four bullets

Assessment:
an oral exam within the framework of the Veterinary Intermediate Examination in "Physiology" after the fourth semester

ANIMAL BREEDING AND GENETICS [18]

Coordinator:
König

Instructors:
König and scientific staff

Course type:
Lecture (2 CHW)

ECTS
2

Introduction:
The lecture will cover the general basics of animal breeding and genetics as well as legal basics.

Overall aims and objectives:
- contents and principles of animal breeding
- laws in animal breeding
- genes, genetic markers, epigenetics, gene editing
- quantitative and qualitative genetics
- reproduction of different livestock species and horses

[18] 1.1, 1.10

- inbreeding, kinship, hereditary defects
- effective population size, genetic diversity

Reading list:

- William, A.; Simianer, H.: Tierzucht, Publisher: Eugen Ulmer Stuttgart (2011), ISBN 978-3-8252-3526-0

Electronic learning material:

see StudIP:
https://studip.uni-giessen.de/studip/

Learning recommendations:

see literature

Assessment:

an oral and a practical exam within the framework of the Veterinary Intermediate Examination in “Animal breeding and genetics” after the fourth semester

4TH SEMESTER

COURSES	CHW	ECTS
General Bacteriology and Mycology **L**	1	1
Biochemistry **L**	3	3
Biochemistry **P/S**	4	6
Physiology **L**	4	4
Physiology **P/S**	5	6
Propaedeutics **L**	2	2
Skills Lab-Propaedeutics **P**	1	1
Animal Breeding **L**	2	2
Animal Breeding **P**	2	3
General Virology **L**	1	1
Elective Courses		
EXAMINATIONS		
Exam in Physiology		2
Exam in Biochemistry		2
Exam in Animal Breeding and Genetics including the assessment of animals		2

L= lecture, P= Practical, S= seminar
CHW= Semesterwochenstunde (contact hour per week)
ECTS = European Credit Transfer and Accumulation System, Indication of Credit Points

General Bacteriology And Mycology [19]

Coordinator:
Ewers

Instructors:
Ewers, Bauerfeind

Course type:
lecture (1 CHW)

ECTS:
1

Introduction:
The lecture will cover the fundamentals of bacteriology and mycology, infection and epidemic studies including infection immunology.

Overall aims and objectives:
Students should be able to:

- explain the structure of bacteria and fungi
- define and correctly apply basic terms of microbiology, epidemiology and immunology
- explain mechanisms of the pathogenesis of microorganisms
- meaningfully apply anti-infectives
- interpret the causes of epidemics
- explain the pathogeneses of infective diseases
- rate the protective results of vaccinations

Reading list:
- Rolle, Mayr: Mikrobiologie, Infektions- und Seuchenlehre, Enke-Verlag, 8. überarbeitete Auflage (2006), ISBN-13: 978-3830410607

Electronic sources:
see StudIP:
https://studip.uni-giessen.de/studip/

Scripts:
the script „Allgemeine Infektions- und Seuchenlehre “of the student body

[19] 1.10, 1.21, 1.24, 1.29

Self-assessments:

self-assessment questions can be found on the website of the Department of Animal Hygiene and Diseases:

https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/ihit/lehre/fragenkataloge

Learning recommendations:

Students are advised to rework their own lecture notes with the help of textbooks and the "catalogue of topics" for the examination subject. Division of labour and joint discussions with fellow students can be helpful. Start the learning phase in good time before the exam.

Assessment:

An oral, theoretical exam within the framework of the Veterinary Medical Examination in "Bacteriology and Mycology". The grade achieved in the theoretical part of the examination is to be credited as a partial grade (80 %) in this examination subject. The examination usually takes place after the 5th semester.

BIOCHEMISTRY

Coordinator:

Mazurek

Instructors:

Mazurek, Scheiner-Bobis

Course type:

Lecture (3 CHW)

ECTS

3

Introduction:

The second part of the biochemistry lecture deals with:

- Amino acids as starting material of important biosynthetic pathways, folic acid
- Nucleic acids Biosynthesis, structure of DNA, RNA
- Replication, transcription, translation
- Molecular biology methods relevant to veterinary medicine, also taking into account transgenic animals,
- Cell cycle, apoptosis, cancer
- Signal transmission between cells and organs,
- Hormones and hormone-controlled regulatory circuits

- Metabolic interaction of organs in normal, pathological or extreme physiological conditions

Overall aims and objectives:

Students should be able to:

- record and describe the metabolic pathways discussed
- establish correlations between the discussed metabolic pathways and diseases
- explain the relevance of metabolites and enzymes of these metabolic pathways for diagnostics

Reading list:

No special recommendation. All commercially available books on biochemistry.

Electronic learning material:

see StudIP and ILIAS:

https://studip.uni-giessen.de/studip/
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Self-assessment questions:

Stud IP / ILIAS

Assessment:

an oral exam within the framework of the Veterinary Medical Examination in "Biochemistry" after the fourth semester

BIOCHEMISTRY PRACTICAL [20]

Coordinator:

Mazurek

Instructors:

Scheiner-Bobis, Mazurek, Beranek, Struff and assistents

Course type:

seminar (1,5 CHW) + practical (2,5 CHW)

ECTS:

6

[20] 1.28

Introduction:

The course will provide an introduction to practical biochemistry for students of veterinary medicine. The course topics include a theoretical and an experimental part.
They deal with:

- the meaning of phosphate for cell biology
- the meaning of biological buffers
- the properties of proteins
- enzymes and their properties
- nucleic acids and protein biosynthesis
- protein- and nitrogen-oxygen-interchange
- carbohydrate metabolism
- lipids and energy metabolism

The approach to the topics is accompanied by a demonstration and application of established biochemical and molecular biological methods, e.g. photometry, methods of determination for various metabolites, electrophoretic fractionation of proteins or DNA, restriction analysis of DNA etc.

Overall aims and objectives:

Students should be able to:

- explain and demonstrate biochemical procedures and methods combined with knowledge of metabolisms, furthermore demonstrate cell functions with basic methods of analysis
- demonstrate an understanding of biochemical processes

Scripts:

practical biochemistry for veterinarians

Self-assessments:

can be found online at:
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Assessment:

- ten oral exams after the seminars during the semester, weekly retrials for written and oral exams; two retrials for experimental assignments
- oral and practical exam within the framework of the Veterinary Intermediate Examination in “Biochemistry” after the fourth semester

PHYSIOLOGY

Coordinator:
Diener, Gerstberger

Instructors:
Diener, Gerstberger, Pouokam, Roth, Rummel

Course type:
lecture (4 CHW)

ECTS:
4

Introduction:
The lecture of the fourth semester (4 CHW) will convey the physiologic fundamentals of important bodily functions of domestic animals (especially mammals). The following organ and functional systems will be dealt with in detail:

- physiology of respiration: basics; respiration mechanisms; diffusion and gas transport; regulation of respiration; pathophysiology
- acid-base control: fundamentals of physical chemistry; acidosis and alkalosis; compensatory mechanisms; kidney and lung as target organs
- physiology of digestion: nutrition absorption and function of the salivary glands, proventricular digestion in ruminants, secretion, resorption and motor activity of the gastrointestinal tract; enteric nerve and hormone system; pathophysiology
- energy and thermal control: closed circuits; temperature cessions and production; calorimetric science and basal metabolic rate; pathophysiology
- endocrinology: basics; hormones of thyroid gland and parathyroid, adrenal, gonadal, heart and kidney, pituitary and hypothalamus; pathophysiology
- lactation: milk production and hormonal control; colostrum

Overall aims and objectives:
Students should be able to:

- understand the physiology of particular organ systems including their cellular and biochemical fundamentals as well as some physical regularities
- deduce and recognize integrative correlations, i.e. the interconnection of the various organ systems due to the control of the nervous system; understand the immune system and, partially, the endocrine system
- receive first insights into the cellular and systematic mechanisms which cause pathophysiological changes of the animal organism

Reading list:

- v. Engelhardt, Breves: Physiologie der Haustiere, Verlag: Enke; 3. vollständig überarbeitete Auflage 2010 (2009), ISBN-13: 978-3830410782
- Speckmann, Hescheler, Köhling: Physiologie, Urban & Fischer Verlag; 5. Auflage (2008), ISBN-13: 978-3437413186

Electronic sources:

see StudIP and ILIAS:

https://studip.uni-giessen.de/studip/
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Haschke, Diener (2007). Multimedia Physiologie –Ein interaktives Lernprogramm für Veterinärmediziner Version 3.2. Enke Verlag im MVS Medizinverlag, Stuttgart

Scripts:

A detailed script that includes numerous slides of the lecture can be bought at the beginning of the semester.

Self-assessments:

Haschke, Diener (2007). Multimedia Physiologie –Ein interaktives Lernprogramm für Veterinärmediziner Version 3.2. Enke Verlag im MVS Medizinverlag, Stuttgart

Learning recommendations:

see the four bullets above

Assessment:

an oral exam within the framework of the Veterinary Intermedite Examination in “Physiology" after the fourth semester

PHYSIOLOGY PRACTICAL [21]

Coordinator:

Diener, Gerstberger

Instructors:

Diener, Gerstberger, Roth, Rummel et al.

Course type:

seminar with practicals (5 CHW)

[21] 1.28

ECTS:

6

Introduction:

During the “Physiological practical with seminar “, which consists of 10 course units of 4 hours each, the subject matter of, for example, one organ system will be discussed in condensed form. The students (in small groups at a maximum of 11 each) will prepare a topic and will subsequently be questioned on this. The seminar will be followed by practical exercises (in small groups of 2-3 students) on human and/or animal specimens, to characterize the organ system mechanically or diagnostically.
The content of the lecture, mostly of the 3rd but also of the 4th semester, will be engrossed with the help of the condensed seminar, the oral assessment and the matching practical.

The seminars/practicals will deal with:

- the physiology and physical chemistry of the red blood cell
- the physiology of the white blood cells; blood clotting
- neurophysiology: nerves and reflexes
- muscle physiology
- the physiology of the heart
- the physiology of the circulation
- respiratory physiology
- sensory physiology
- energy and thermal reception balance
- digestive physiology: resorption
- Renal physiology

Overall aims and objectives:

Students should be able to:

- apply and understand comprehension-based or simple diagnostic methods of assessment

Reading list:

- v. Engelhardt, Breves: Physiologie der Haustiere, Verlag: Enke; 3. vollständig überarbeitete Auflage 2010 (2009), ISBN- 13: 978-3830410782
- Speckmann, Hescheler, Köhling: Physiologie, Urban & Fischer Verlag; 5. Auflage (2008), ISBN-13: 978-3437413186 Klinke, Silbernagel: Lehrbuch der Physiologie, Verlag: Thieme, Stuttgart; 5. Auflage (2005), ISBN-13: 978-3137960058

Electronic sources:

see StudIP and ILIAS:
https://studip.uni-giessen.de/studip/

https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Haschke, Diener (2007). Multimedia Physiologie – Ein interaktives Lernprogramm für Veterinärmediziner Version 3.2. Enke Verlag im MVS Medizinverlag, Stuttgart

Scripts:

A detailed manual that introduces the practical exercises can be bought at the beginning of the semester.

Self-assessments:

Haschke, Diener (2007). Multimedia Physiologie – Ein interaktives Lernprogramm für Veterinärmediziner Version 3.2. Enke Verlag im MVS Medizinverlag, Stuttgart

Learning recommendations:

see the four bullets above

Assessment:

- oral preliminary test on tutorial days
- an oral exam within the framework of the Preliminary Intermediate Examination in “Physiology" after the fourth semester

PROPAEDEUTICS [22]

Coordinator:

Moritz

Instructors:

Moritz, Kramer, Fey, Röcken, Lierz, Wehrend, Sickinger, Reiner

Course type:

lecture (2 CHW)

ECTS:

2

Introduction:

The lecture of the 4th semester will deal with the clinical assessment methods of all relevant species and their differences. Normal results are important to recognize changes; therefore, these will be covered in propaedeutics.

[22] 1.3, 1.15, 1.16, 1.17, 1.20

Overall aims and objectives:

Students should be able to:

- describe normal findings concerning all species they have been introduced to
- list a complete examination scheme in internal medicine, surgery and reproductive medicine
- work problem-oriented
- apply evidence-based medicine

Reading list:

- Baumgartner, Walter: Klinische Propädeutik der Haus- und Heimtiere, Verlag: Parey Bei Mvs; 7. vollständig überarbeitete und erweiterte Auflage (2009), ISBN-13: 978-3830441755
- Kramer (Hrsg.): Kompendium der Allgemeinen Veterinärchirurgie, VET-Kolleg, Verlag: Schlütersche; 1. Auflage (2003), ISBN-13: 978-3877067437

Electronic sources:

See StudIP and ILIAS:

https://studip.uni-giessen.de/studip/
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Learning recommendations:

a revision of the theoretical subject matter before the tutorial in the fifth semester

Assessment:

a practical exam within the framework of the Veterinary Medical examination in “Clinical Propaedeutics” of one animal species after the fifth semester

PROPAEDEUTICS – MEDICAL TRAINING

Coordinator:

Katja Frey, Alexis Wagner

Instructors:

Katja Frey, Alexis Wagner

Course type:

lecture

Introduction:

Medical training, which is based on the knowledge of applied learning theory, is about using classic and operant conditioning within practical training to make the animal's visit to the vet

as pleasant as possible and to actively generate a patient, who shows cooperative behavior, even during an uncomfortable treatment.
Medical training makes it possible to reduce sedation and anesthesia to an absolutely necessary minimum and to sustainably reduce the associated risks. Knowing about the right timing and the various training systems plays an important role here and enables the vet to guarantee the greatest possible safety for themselves and the assisting staff while handling the patients.

In the associated elective continuation course, the students can test different medical training behaviors on dogs and therefore practice the creation of a reliable training plan. Here the focus is on the observation of submissive behavior and so-called calming signals.

Overall aims and objectives:

The students can

- recognize and reduce stress symptoms
- define and apply classical and operant conditioning
- describe and use relevant training systems
- create a training plan
- carry out short-term training in practical application

Reading list:

- Blut abnehmen beim Hund trainieren: Mit Medical Training entspannt zum Tierarzt (Dr. Dorothea Johnen, Easy Dogs Hundebuch-VERLAG)
- Medical Training für Hunde: Körperpflege und Tierarztbehandlungen vertrauensvoll meistern (Anna Oblasser-Mirtl, Cadmos Hundepraxis)
- Medical Training für Pferde: Entspannt bei Tierarzt, Hufschmied & Co (Nina Steigerwald, Müller Rüschlikon Verlag)
- Verhaltensmedizin bei der Katze: Leitsymptome, Diagnostik, Therapie und Prävention (Sabine Schroll; Kleintier konkret)
- Verstärker verstehen: Über den Einsatz von Belohnungen im Hundetraining (Viviane Theby; Kynos Verlag)

Electronic sources:

See StudIP:
https://studip.uni-giessen.de/studip/

Assessment:

None

SKILLS LAB – PROPAEDEUTICS [23]

Coordinator:
Arnhold

Instructors:
Student tutors

Course type:
practical (1 CHW)

ECTS: 1

Introduction:
The Skills Lab is a learning and training centre where students can train practical veterinary skills stress-free on simulators. During the 4th semester practice, clinical examination methods in different animal species are presented. Topics such as general examination, gynaecological examination, medication application techniques, handling, communication with the animal owner and surgical dressing techniques are covered.

Overall aims and objectives:
Students should be able to:

- list theoretically a general examination procedure for small animals, horses and cattle
- list different types of medication application in small animals, horses, cattle, birds and pigs and demonstrate them practically on a model
- demonstrate different radiographic positioning techniques in small animals on a model and name the grading of equine limb radiographs
- list rectal and gynaecological examinations in horses and cattle in theory and demonstrate them in practice on a simulator
- demonstrate restraint measures on different animal species on a model and gain knowledge in handling
- reproduce a cardiovascular examination in theory and master the use of the stethoscope; demonstrate auscultation of heart and lungs on the simulator in practice and recognise physiological and selected pathological findings
- apply a toe pad dressing on a horse leg model
- conduct an anamnesis interview

[23] 1.3, 1.14, 1.15, 1.16, 1.17, 1.23

Reading list:

- Baumgartner, Walter, Klinische Propädeutik der Haus- und Heimtiere, Publisher: Parey Bei Mvs; 7th completely revised and expanded 9th edition (2018).
- Reiner G., Krankes Schwein - kranker Bestand, 2015
- Von Pückler, Kerstin, Röntgen Hund und Katze - Thorax und Abdomen, Publishers: Thieme, 2018

Electronic learning materials:

see StudIP:
https://studip.uni-giessen.de/studip/

Learning recommendations:

Using the electronically provided teaching material to prepare and follow up the practical exercise.

Assessment:

none

ANIMAL BREEDING AND GENETICS [24]

Coordinator:

König

Instructors:

König and scientific staff

Course type:

Lecture (2 CHW)

ECTS:

2

Introduction:

Students will get to know the specific requirements and prerequisites as well as the implications concerning the breeding of agricultural livestock, as well as horses, dogs and cats.

Overall aims and objectives:

- Methods of breeding value estimation

[24] 1.1, 1.10

- Determinants of breeding progress
- Reproductive biotechnologies
- Methods of crossbreeding
- Breeds, performance testing and breeding programmes, genetic peculiarities in different livestock species as well as in the horse

Reading list:

- William, A.; Simianer, H.: Tierzucht, Publisher: Eugen Ulmer Stuttgart (2011), ISBN 978-3-8252-3526-0

Scripts:

see StudIP
https://studip.uni-giessen.de/studip/

Learning recommendations:

see literature

Assessment:

a written and practical exam within the framework of the Veterinary Medical Examination in "Animal Breeding and Genetics" after the fourth semester

PRACTICAL IN ANIMAL BREEDING AND GENETICS [25]

Coordinator:

König

Instructors:

König, Engel and scientific staff

Course type:

practical (2 CHW)

ECTS:

3

Introduction:

The general and specific fundamentals of animal rating and evaluation will be explained; students practice these on various animal species.

[25] 1.20, 1.28

Overall aims and objectives:

Students should be able to:

- assess agricultural livestock on the basis of age, weight and appearance with regard to usage and breeding value.

Reading list:

- Sambraus, H.H.: Atlas der Nutztierrassen, Verlag: Ulmer Eugen Verlag; 5. Auflage (2000), ISBN-13: 978-3800173488
- Brem, G.: Exterieurbeurteilung Landwirtschaftlicher Nutztiere, Verlag: Ulmer (Eugen) (1998), ISBN-13: 978-3800143726

Learning recommendations:

see reading list

Assessment:

a written exam at the end of the practical, as well as oral and practical exams within the framework of the Veterinary Intermediate Examination in "Animal breeding and genetics including animal rating" at the end of the fourth semester

General Virology [26]

Coordinators:

Weber, Lamp, König

Instructors:

Weber, Lamp, König, Bank-Wolf

Course type:

Lecture (1 CHW)

ECTS:

1

Prerequisites:

Pre-Physics

[26] 1.10, 1.21, 1.24

Introduction:

Basics of the structure and taxonomy of viruses as well as the molecular biology and immunobiology of viruses are explained. General aspects of immunology, pathogenesis, prophylaxis and epidemiology are discussed with regard to virus-related diseases.

Overall aims and objectives:

Students should be able to:

- explain the fundamentals of virology, such as the properties of viruses and the causation and development of diseases through viruses

Reading list:

- Tiermedizinische Mikrobiologie, Infektions- und Seuchenlehre, Enke-Verlag, 10th revised edition 2010, ISBN-10: 3-8304-1262-2, ISBN-13: 978-3-8304-1262-5

Electronic learning material:

see StudIP:

https://studip.uni-giessen.de/studip/

Learning recommendations:

lecture notes with the help of textbooks (see above), given literature recommendations

Assessment:

a written exam within the framework of the Veterinary Medical Examination in “Virology" after the fifth semester

5TH SEMESTER

COURSES	CHW	ECTS
Bacteriology, specific **L**	2	2
Bacteriology/Virology **P**	2	3.5
Parasitology **L**	3	3
Parasitology **P**	2	3.5
Pathology, general **L**	3	3
Pathology, general **S**	1	1
Pharmacology and Toxicology, general **L**	2	2
Toxicology, specific	1	1
Propaedeutics **P**	4	5
Animal Nutrition **L**	2	2
Animal Hygiene **L**	2	2
Virology, specific **L**	2	2
Elective Courses		
EXAMINATIONS		
Exam in Bacteriology and Mycology		2
Exam in Virology		2
Exam in Clinical Propaedeutics		2
Exam in Pharmacology and Toxicology		1

L= lecture, P= practical, S= seminar
CHW = contact hour per week (Semesterwochenstunde)
ECTS = European Credit Transfer and Accumulation System, Indication of Credit Points

Please note: further information regarding courses can be found at:
http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/studium

SPECIFIC BACTERIOLOGY AND MYCOLOGY [27]

Coordinator:
Ewers

Instructors:
Ewers, Bauerfeind

Course type:
lecture (2 CHW)

ECTS:
2

Prerequisites:
participation in the lecture "Bacteriology and Mycology (general)"in the 4th semester

Introduction:
The most relevant bacterial and fungal infections of animals will be discussed in the lecture. The content of the lecture is divided into pathogen characteristics, taxonomy, epidemiology, pathogenesis and clinical diagnoses, as well as therapy and prophylaxis.

Overall aims and objectives:
Students will be able to:

- identify important bacterial and mycotic infectious diseases of animals and...
- name their pathogens and explain their characteristics and taxonomy
- explain the clinical and pathological-anatomical as well as histopathological signs of disease
- explain the danger of bacteria and fungi
- define the habitats of the pathogens
- list the possibilities of laboratory-based infection diagnostics
- give specific recommendations on therapy and prophylaxis
- explain epidemiological characteristics (reservoirs, prevalences, transmission routes, etc.)

Reading list:

- Selbitz, Truyen, Valentin-Weigand: Tiermedizinische Mikrobiologie, Infektions- und Seuchenlehre, Enke-Verlag, 10., vollständig überarbeitete Auflage (2015), ISBN: 978-3830410805

[27] 1.10, 1.21, 1.24

- Songer, Post: Veterinary Microbiology (2005), Verlag Saunders, ISBN: 978-1416054047
- Hirsh, MacLachlan, Walker: Veterinary Microbiology (2004), Blackwell Publishing, ISBN: 978-0813803791

Electronic sources:
see StudIP:
https://studip.uni-giessen.de/studip/

Scripts:
the student body will provide the script „Spezielle Bakteriologie und Mykologie “.

Self-assessments:
a questionnaire can be found online at the homepage of the department

Learning recommendations:
Students are advised to extend the script during the lecture; to revise the syllabus with the help of the books mentioned above and to prepare for the exam in time.

Assessment:
an oral exam (60%) within the framework of the Veterinary Medical Examination in “Bacteriology and Mycology" after the fifth semester

MICROBIOLOGICAL PRACTICAL IN BACTERIOLOGY, MYCOLOGY AND IMMUNOLOGY [28]

Coordinator:
Bauerfeind, Ewers

Instructors:
Ewers, Bauerfeind und Mitarbeiter*innen (Heydel, Prenger-Berninghoff u.a.)

Course type
practical (2 CHW)

ECTS:
2,5

Prerequisites:
participation in the lecture "Bacteriology and Mycology" (general and specific part).

[28] 1.10, 1.21, 1.24, 1.28

Introduction:

Students receive training in dealing with pathogenic bacteria and fungi; in particular, they will learn simple methods to diagnose infections caused by bacteria and fungi. These methods will comprise microscopic, cultivational, biochemical and serological test methods.

Overall aims and objectives:

Students should be able to:

- carry out and evaluate simple microbiological and serological working methods
- correctly perform complex laboratory diagnostic procedures and identify the pathogens of important microbially caused diseases in animals
- master hygienic safety measures in microbiological laboratory work and safely handle pathogenic microorganisms

Reading list:

- Rolle, Mayr: Mikrobiologie, Infektions- und Seuchenlehre, Enke-Verlag 8. überarbeitete Auflage (2006), ISBN-13: 978-830410607
- Quinn et al: Clinical Veterinary Microbiology, Verlag: Elsevier Ltd, Oxford; Auflage: 2Rev ed. (2010), ISBN-13: 978-0723432371

Electronic learning materials:

Accredited participants can download the script for the exercise as well as a selection of the PowerPoint slides presented from the internet platform "Stud.IP".

Self-assessments:

Answer the following questions:

- Which culture media are used in microbiology?
- Which criteria are used to assess microbial cultures?
- Do I know the microscopic methods of assessment?
- How are bacteria stained (e.g. staining according to Gram, Köster, Ziehl-Neelsen) and evaluated?
- How to read a coursed row (Bunte Reihe)?
- How is the OSA Colour System applied?
- Which direct and indirect verification methods esist and how are they evaluated?

Learning recommendations:

Students are advised to extend the script during the practical and to read it before the exam; the script may be used during the exam.

Assessment:

Students in the examination subject "Bacteriology and Mycology" have to prepare, examine and explain a microbiological preparation in the so-called practical part of the examination (§ 37 TAppV). The grade achieved is to be credited as a partial grade (20 %) in this examination subject. The examination usually takes place after the 5th semester. On application, the practical part of the examination can already be taken during the course of study at the end of the corresponding practical dissection (during the 5th semester, usually in mid-January).

MICROBIOLOGICAL PRACTICAL (VIROLOGICAL PART) [29]

Coordinator:

F. Weber

Instructors:

B. Bank-Wolf, M. König, B. Lamp, S. Schmid, F. Weber

Course Type:

Exercise (8 h per student)

ECTS:

1

Prerequisites:

Participation in the lecture Virology (general and special part)

Introduction:

Students will gain a practical insight into virological working methods and learn how to deal with viruses and cell cultures. Practically carried out are virus cultivation, serum neutralization assay, hemagglutination inhibition test, agar-gel immunoprecipitation and ELISA procedures. Additional methods are demonstrated (e.g. electron microscopy and PCR techniques). The practical exercises are embedded in case examples from the diagnostics. In addition, the theoretical background to the working methods as well as to other aspects of virological laboratory diagnostics will be presented.

Overall aims and objectives:

Students carry out virological and serological tests by themselves and make appropriate diagnoses. Students learn how to deal with pathogenic viruses as well as the necessary hygiene and protective measures.

[29] 1.10, 1.21, 1.24, 1.28

Reading list:

- Selbitz, Truyen, Valentin-Weigand: Veterinary Microbiology, Infection and Disease Theory, Enke-Verlag, 10th, updated edition (2015), ISBN: 978-3-8304-1262-5
- N. James MacLachlan and Edward J. Dubovi (Ed.) Fenner's Veterinary Virology. 5th Edition (2015). Academic Press, ISBN 978-0-12-800946-8

Electronic sources:

Students can download the practice script and a selection of the presented PowerPoint slides from the Stud.IP Internet platform.

Self-assessments:

- What are the prerequisites for the cultivation of viruses in cell cultures?
- How can infection of cells be detected?
- What is a cytopathic effect and how does it manifest itself?
- How do I interpret virological laboratory findings?
- Which ELISA techniques are suitable for virological diagnostics?
- How is hemagglutination inhibition carried out and evaluated?
- What direct and indirect virological detection methods are available and where are they used?
- What statements can be made with the help of the serum neutralization test?
- Learning recommendations:
- In addition to the script, work manuals and log sheets are distributed and filled in during the course. Together with the script, own transcripts and textbooks, the topics can be elaborated in a comprehensive way.

Assessment:

The course contents are part of the curriculum of Virology checked in the state exam.

PARASITOLOGY [30]

Coordinator:

Taubert, Grevelding

Instructors:

Taubert, Grevelding, Hermosilla, Falcone

Course type

lecture (3 CHW)

[30] 1.10, 1.21, 1.24

ECTS:

3

Introduction:

The lecture will provide an overview of endoparasites and ectoparasites (arthropods, helminths, protozoans) with specific regard to their relevance for veterinary medicine. Students will be introduced to basic principles of morphology and the evolutionary biology of important parasitic organisms, as well as immune reactions to parasitic diseases. Information on epidemiology, the meaning, development, clinical/pathological appearances, the diagnosis and treatment of parasitic diseases of animals will be covered. Concerning parasitic diseases that apply to several hosts, those aspects that apply to human medicine will be discussed as well.

Overall aims and objectives:

Students should be able to:

- explain parasitic relations
- describe the biology of parasites and the disease patterns they cause
- explain diagnostic procedures and develop treatment methods

Reading list:

- Eckert, Friedhoff, Zahner, Deplazes: Lehrbuch der Parasitologie, Verlag: Enke; 2. vollständig überarbeitete Auflage (2008), ISBN-13: 978-3830410720
- Schnieder (Hrsg.): Veterinärmedizinische Parasitologie, Verlag: Parey im MVS Medizinverlag Stuttgart, 6. vollständig überarbeitete und erweiterte Auflage (2006), ISBN-13: 978-3-8304-4135-9

Electronic sources:

If needed, those will be provided online in the form of downloadable word-documents and PDF-files.

https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/parasitologie/lehre/down

Scripts:

an overview of the syllabus will be provided at the beginning of the lecture

Self-assessments:

will be provided in the form of short tests during the parallel course Practical Parasitology.

Learning recommendations:

reading list, lecture and tutorial sources

Assessment:
a practical and an oral exam within the framework of the Veterinary Medical Examination in “Parasitology" after the sixth semester

PRACTICAL PARASITOLOGY [31]

Coordinator:
Taubert, Grevelding

Instructors:
Taubert, Grevelding, Quack, Hermosilla, Falcone

Course type
practical (2 CHW)

ECTS:
3,5

Prerequisites:
- Participation in the lecture “Parasitology” during the fifth semester
- Knowledge of general health and safety guidelines, of the correct conduct in the laboratory and the handling of potentially (human) infectious material
- Basic knowledge of the use of a microscope
- Preparation in advance of the topic that is to be discussed (see below)

Introduction:
After an introduction to general procedures, students will examine prepared objects of parasites macroscopically and microscopically. Furthermore, simple assessments methods to prove parasitic development stages are conducted.

The tutorials consist of 3 units with a total of 12 topics:
(I) “General Parasitology “; examples will show the morphology of parasitic protozoa und helminths/helminthes and arthropods including their developmental stages;
(II) “Specific Parasitology “; important endoparasites and ectoparasites including
their agents will be explained with regard to different hosts and, with the help of numerous case studies, the parasitic diagnostics, treatments and preventive procedures will be explained;
(III)” Diagnostic Tutorials “; important topics and specimens are revised in order to engross knowledge and prepare students for the exam

[31] 1.10, 1.21, 1.24, 1.28

Overall aims and objectives:

Students should be able to:

- apply the fundamentals that have been theoretically acquired during the lecture on morphology, development cycles and ways of infection; on (sub)clinical, pathologic-anatomical and economical effects of faunal parasites, their zoonotic meaning, (direct and/or indirect) diagnostics as well as the fight against the disease
- explain and apply parasitic and epidemiological nomenclature
- systematically distinguish animal phylum
- recognize and describe parasitic protozoa (flagellates, apicomplexa), adult helminths (trematodes, zestodes, nematodes) and arthropods (acari, insecta) by means of morphologic characteristics
- use basic dichotomous keys
- describe and recognize developmental stages of parasitic protozoa, helminths and arthropods
- define endoparasites and ectoparasites according to their tissue/organ localization in hosts (ruminants, equids, pigs, carnivores, poultry, bees) and to name their host specificity
- name, describe and apply direct and/or indirect (serologic) diagnostic methods
- explain and rate the indication and efficiency of various licensed antiparasitics

Reading list:

- Eckert, Friedhoff, Zahner, Deplazes: Lehrbuch der Parasitologie, Verlag: Enke; 2. vollständig überarbeitete Auflage (2008), ISBN-13: 978-3830410720
- Schnieder (Hrsg,): Veterinärmedizinische Parasitologie, Verlag: Parey im MVS Medizinverlage Stuttgart, 6. vollständig überarbeitete und erweiterte Auflage (2006), ISBN-13: 978-3-8304-4135-9

Electronic sources:

the Homepage of the Department of Parasitology contains links to picture and text files:

http://www.uni-giessen.de/cms/fbz/fb10/institute_klinikum/institute/parasitologie/links/paraweb

Scripts:

Bauer: Praktikum der veterinärmedizinischen Parasitologie. Verlag Ferber´sche Uni-Buchhandlung Gießen (second-hand)

Self-assessments:

The learning success will be assessed during the course of the practical in the form of four written multiple choice tests.

Learning recommendations:
see the above

Assessment:
Multiple-choice tests during the semester and one practical, written
and oral exam within the framework of the Veterinary Medical Examination in "Parasitology" after the sixth semester

GENERAL PATHOLOGY [32]

Coordinator:
Herden

Instructors:
Herden, Köhler, Henrich

Course type:
lecture (3 CHW)

ECTS:
3

Introduction:
A systematic description of pathological conditions and processes in organisms. An explanation of the nomenclature and definitions of pathological conditions and processes.

Overall aims and objectives:
Students should be able to:

- define and explain principles and mechanisms
- name and describe of the systematic classification of pathological processes and conditions of the organism

Reading list:

- McGavin, Zachary: Pathologie der Haustiere; Allgemeine, spezielle und funktionelle Veterinärpathologie, Verlag: Elsevier, München (2009), 1. Auflage 2009, ISBN-13:978-3437582509

[32] 1.21, 1.24, 1.33

Electronic sources:

see StudIP and ILIAS:

https://studip.uni-giessen.de/studip/
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Scripts:

a script of “Allgemeine Pathologie“ will be provided by the student body.

Learning recommendations:

Students are advised to complement the outlines of the lecture with the most important content of teaching and compare this to the script and books. Question all vague matters and ask the instructors for explanations.

Assessment:

- a written examination after the 5th semester (30% of the final grade)
- a practical and an oral exam within the framework of the Veterinary Medical Examination in “General Pathology and Specific Pathological Anatomy and Histology" in the eleventh semester

SEMINAR GENERAL PATHOLOGY [33]

Coordinator:

Herden

Instructors:

Herden, Köhler, Henrich, Hirz, NN

Course type:

Seminar (1 CHW)

ECTS

1

Introduction:

Important aspects of essential topics of general pathology are elaborated and deepened in discourse.

Overall aims and objectives:

Students should be able to:

[33] 1.21, 1.24, 1.33

- define and classify the conditions discussed, recognise and explain diseases and possible aetiologies and pathogenesis

Reading list:

- Zachary: Pathologic Basis of Veterinary Disease Verlag: Academic Press, 6th edition (7 July 2016), ISBN-13: 978-0323357753
- Baumgärtner/Gruber: Allgemeine Pathologie für die Tiermedizin, Publisher: Enke; Edition: 2 (28 January 2015), ISBN-13: 978-3830412854

Electronic learning material:

see StudIP:
https://studip.uni-giessen.de/studip/

Learning recommendations:

topic preparation before the respective seminar

Assessment:

- a written exam after the 5th semester (30% of the final grade)
- an oral and practical exam as part of the Veterinary Medical Examination in "General Pathology and Specific Pathological Anatomy and Histology" in the eleventh semester.

General Pharmacology [34]

Coordinator:

Geyer

Instructors:

Geyer

Course Type:

lecture (2 CHW)

ECTS:

2

Introduction:

- Fundamentals of drug and toxin effects on the basis of the principles of receptor-drug interaction (agonists, antagonists, partial and inverse antagonists), tissue- and ligand-

[34] 1.10, 1.18, 1.25, 1.27

specific receptor equipment, dose-response profiles, intracellular signal processing and the diversity of effector systems; toxicity and detoxification reactions, distribution and elimination, transport and storage, drug interactions, animal-specific peculiarities of pharmacokinetics, significance of polymorphisms and genetic defects in proteins, basics of organotoxic effects; molecular causes of diseases and their correction in the context of drug therapy; fundamentals of the biological and toxicological mechanisms of carcinogenesis, tumour promoters, full carcinogens as well as onco- and tumour suppressor genes

- Special therapeutic directions in the Medicines Act such as homeopathy, phytotherapy and anthroposophic medicinal therapy; placebo effect.

Overall aims and objectives:

Students should be able to:

- name the difference between specific and unspecific reactions to pharmaceutical substances
- explain the causality of pharmaceutical substance and effects caused in terms of specific receptor interactions
- carry out the selection of therapeutic methods with regard to clinical applicability
- explain on a molecular basis the interaction of antidotes in poisonings
- define the groups of receptors and give examples of receptor specific drugs

Reading list:

- Lehrbuch der Pharmakologie und Toxikologie für die Veterinärmedizin (Löscher/Richter), aktuelle Auflage;
- Verschiedene Lehrbücher der Pharmakologie und Toxikologie aus der Humanmedizin

Electronic sources:

see StudIP:
https://studip.uni-giessen.de/studip/

Scripts:

none of the institute; existing student scripts are faulty and often insufficient

Learning recommendations:

attending the lectures; preparation with the help of the lecture notes (slides on StudIP); learning the material with the help of the textbooks

Assessment:

A written single-choice test in "General Pharmacology and Toxicology" at the end of the 5th semester. Grade is 20% partial grade for the Veterinary Medical Examination in "Pharmacology and Toxicology" after the 8th semester.

SPECIFIC TOXICOLOGY [35]

Coordinator:

Geyer

Instructors:

Geyer, Hamann

Course type

lecture (1 CHW)

ECTS:

1

Introduction:

- a lecture on specific natural poisons as well as those of anthropogenic origin, their mode of action, their risk potential and the rates of success in therapy
- bacteria toxins, mildew toxins, plant toxins, animal toxins, fungicides, herbicides, insecticides and other pesticides
- halogen cyclic hydrocarbon substances, environmental toxins, solvents and gases including radon
- heavy metals as well as asbestos
- a discussion of the latest examples of toxins according to current news reports

Overall aims and objectives:

Students should be able to:

- name causal antidote therapies on the basis of a thorough knowledge of toxin effects
- undertake a rating of toxins with regard to risk potential and exposition
- explain the meaning of acute as well as chronic exposure to toxins with reference to examples
- define symptoms of and identification methods for animal reactions to toxins

[35] 1.10

Reading list:
Lehrbuch der Pharmakologie und Toxikologie für die Veterinärmedizin (Löscher/Richter), aktuelle Auflage; verschiedene Lehrbücher der Pharmakologie und Toxikologie aus der Humanmedizin.

Electronic sources:
see StudIP:
https://studip.uni-giessen.de/studip/

Learning recommendations:
attending the lectures; preparation with the help of the lecture notes (slides on Stud.IP); learning the material with the help of the textbooks

Assessment:
a multiple-choice test in specific toxicology at the end of the fifth semester (20%) as part of the Veterinary Medical Examination in "Pharmacology and Toxicology" after the eighth semester

PRACTICAL IN PROPAEDEUTICS [36]

Coordinator:
Moritz, Kramer, Lierz, Fey, Wehrend, Sickinger, Reiner, Röcken

Instructors:
many

Course type:
practical with animals (4 CHW)

ECTS:
5

Prerequisites:
attendance of the lecture Propaedeutics in the 4th semester

Introduction:
By working in small groups directly with the animals, students will apply the fundamental theoretical knowledge they acquired during the lectures of the 4th semester.

[36] 1.3, 1.15, 1.16, 1.17, 1.20, 1.28

Overall aims and objectives:

Students should be able to:

- conduct an entire examination of a normal patient (cattle, pig, horse, dog, cat, bird)
- name and apply adequate coercive measures.
- recognize a deviation from the normal findings
- list the most important normal and abnormal examination data
- define the nomenclature of clinical diagnoses

Reading list:

- Baumgartner, Walter, Klinische Propädeutik der Haus- und Heimtiere, Verlag: Parey Bei Mvs; 7. vollständig überarbeitete und erweiterte Auflage (2009), ISBN-13: 978- 3830441755
- Kramer (Hrsg.): Kompendium der Allgemeinen Veterinärchirurgie, VET-Kolleg, Verlag: Schlütersche; 1. Auflage (2003), ISBN-13: 978-3877067437

Electronic sources:

see StudIP:
https://studip.uni-giessen.de/studip/

Learning recommendations:

Students are advised to revise the theoretical fundamental knowledge before the tutorial in the fifth semester.

Assessment:

a practical examination within the framework of the Veterinary Medical Examination in “Clinical Propaedeutics" after the fifth semester (animal species will selected at random on the day of the examination)

ANIMAL NUTRITION [37]

Coordinator:

Ringseis

Instructor:

Ringseis

Course type:

Lecture (2 CHW)

[37] 1.10, 1.20

ECTS:

2

Introduction:

Nutritional physiology of farm and companion animals:

- Comparative digestive physiology; functions of the different segments of the digestive tract; functions of digestive secretions; digestibility vs. absorbability; methods for determining digestibility; factors influencing nutrient digestibility

Nutritional physiology of macronutrients:

- Digestion and absorption of water; functions of water; regulation of water balance; water requirements
- Digestion and absorption of carbohydrates; functions of carbohydrates; metabolic pathways in carbohydrate metabolism (glycolysis, gluconeogenesis, hexose monophosphate pathway, glycogen synthesis/degradation); regulation of carbohydrate metabolism
- Digestion and absorption of fats; functions of fats (triglycerides, cholesterol, fatty acids); metabolic pathways of lipid metabolism (fatty acid synthesis, desaturation and elongation of fatty acids; synthesis of eicosanoids); cholesterol synthesis, bile acid synthesis, steroid hormone synthesis); regulation of lipid metabolism; essentiality of fatty acids
- Digestion and absorption of proteins; functions of proteins and amino acids; metabolic pathways of amino acids (transamination, deamination, decarboxylation, urea synthesis) and proteins (protein synthesis, protein degradation); non-protein nitrogen; ruminohepatic cycle; urea recycling; concept of ideal protein; essentiality of amino acids; determination of protein/amino acid requirements

Nutritional physiology of micronutrients:

- Minerals: digestion, absorption, retention and excretion of bulk and trace elements; functions of bulk and trace elements; determination of mineral requirements.
- Vitamins: Stages of vitamin supply; functions of water-soluble and fat-soluble vitamins; determination of vitamin requirements; animal species-specific features of vitamin requirements.

Overall aims and objectives:

Students should be able to:

- have knowledge of the nutritional physiology of farm and companion animals

Reading list:

- Kirchgessner, M., Roth, F.X., Schwarz, F.J., Stangl, G.I.: Tierernährung; 12th edition, DLG-Verlag Frankfurt/Main 2008, ISBN 978-3-7690-0703-9

- Kamphues, J., Coenen, M., Iben, Chr., Kienzle, E., Pallauf, J., Simon, O., Wanner, M., Zentek, J.: Supplemente zu Vorlesungen und Übungen in der Tierernährung; 11th edition, Schaper Verlag Alfeld-Hannover 2009, ISBN 978-3-7944-0223-6

Electronic learning materials:
PowerPoint presentations

Learning recommendations:
We recommend that you watch the PowerPoint presentation before the lecture and that you consolidate the material in the follow-up using the textbooks listed.

Assessment:
a written exam within the framework of the Veterinary Medical Examination in "Animal Nutrition" after the sixth semester

ANIMAL HYGIENE [38]

Coordinator:
Ewers

Instructors:
Bauerfeind, Ewers and assistants

Course type:
lecture (2 CHW)

ECTS:
2

Prerequisites:
attendance of the lecture “Animal Husbandry” in the 2nd semester

Introduction:
This lecture will deal with the significance of abiotic environmental influences for the health and performance as well as the well-being of animals. This course also deals with the impact of animal husbandry on the environment. The focus is on hygienic measures to protect animals from biotic and abiotic causes of disease.

[38] 1.1, 1.10, 1.32, 1.36

Overall aims and objectives:

Students should be able to:

- explain technopathics
- measure and optimize environmental factors
- list and rate methods and substances for disinfection, sterilization and disinfestation
- create hygiene plans for animal husbandry
- rate risks of waste disposal
- name hygienic risks of animal husbandry

Reading list:

- Methlin, Unshelm: Umwelt- und tiergerechte Haltung, Verlag: Parey Bei Mvs; 1. Auflage (2002), ISBN-13: 978-3830440000
- Sommer/Greuel/Müller: Hygiene der Rinder- und Schweineproduktion, ISBN-13:978-3825205140

Scripts:

„Tierhygiene“, a script provided by the student body

Self-assessments:

an elaborate questionnaire can be found on the homepage of the department:
https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/ihit/lehre/fragenkataloge

Learning recommendations:

the script, extended with notes of the lecture and excerpts from the books of the reading list

Assessment:

an oral exam within the framework of the Veterinary Medical Examination in “Animal husbandry and animal hygiene" after the sixth semester

VIROLOGY [39]

Coordinator:

Weber, König

Instructors:

Weber, König

[39] 1.10, 1.21, 1.24

Course type:
lecture (2 CHW)

ECTS:
2

Prerequisites:
knowledge of general virology from courses during the 4th semester

Introduction:
The lecture will deal with those virus infections that are relevant for veterinary medicine; in general, the following aspects will be discussed:

- Virus system and taxonomy
- Clinic
- Pathogeneses
- Epidemiology
- Diagnostic
- Treatment

In particular, the diseases of domestic mammals will be discussed.

Overall aims and objectives:
Students should be able to:

- classify viruses and understand their characteristics
- describe diseases that are caused by viruses and correlate these to the respective virus
- explain important aspects of virus infections like pathogenesis, diagnoses and treatment

Reading list:
- Michael Rolle/Anton Mayr, Medizinische Mikrobiologie, Infektions- und Seuchenlehre. Enke Verlag Stuttgart, 8. Auflage (2007), ISBN-13: 978-3830410607
- Bernd Liess/Oskar-Rüger Kaaden, Virusinfektionen bei Haus- und Nutztieren, Verlag: Schlütersche, Hannover, 2. Auflage, aktualisierte und erweiterte Auflage (2009), ISBN-13: 978-3877067451

Electronic sources:
see StudIP:
https://studip.uni-giessen.de/studip/

Scripts:
a script will be provided by the Institute of Virology

Self-assessments:
a questionnaire is available

Learning recommendations:
lecture, script, reading list, virus poster

Assessment:
a written assessment (multiple-choice test) within the framework of the Veterinary Medical Examination in “Virology" after the sixth semester

6TH SEMESTER

BLOCKS	WEEKS	ECTS
General	1	1
Lymphoreticular system	3	3
Dermatology	3	3
Anaesthesiology	1	1
Locomotor System	6	6
REGULAR COURSES	CHW	ECTS
Pharmaceutical and Drug Prohibition Law **L**	1.071	1
Pharmaceutical and Drug Prohibition Law **P/S**	1,572	3
Meat Hygiene and Food Science **L**	2	2
Animal Nutrition **P**	2	3
Dairy Science **L**	1	1
Elective Courses		
EXAMINATIONS		
Pharmaceutical and Drug Prohibition Law		2
Animal Nutrition		2
Animal Husbandry and Hygiene		2
Parasitology		2
Partial Examination MCQ Internal Medicine		
Partial Examination MCQ Surgery and Anaesthesiology		
Partial Examination MCQ Reproductive Medicine		
PRACTICAL		
4 week practical (extramural)		

L= lecture, P= practical, S= seminar
CHW = contact hour per week (Semesterwochenstunde)
ECTS = European Credit Transfer and Accumulation System, Indication of Credit Points

Please note: further information regarding courses can be found at:
http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/studium

Duration of block courses is given in “h =hours”, 1h =45 min

BLOCKS

GENERAL

Summary:
In the first organ block, the fundamentals of specific pharmacology and some selected porcine diseases will be presented. In addition, the basic terminology of disinfection will be discussed from a clinical point of view.

Further details (e.g. reading list) regarding individual courses can be found online:
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/studium

Courses in detail:

INSTITUTE OF PHARMACOLOGY AND TOXICOLOGY (GEYER)

AUTONOMIC NERVOUS SYSTEM L (5H) [40]

Students should be able to:

- demonstrate a critical understanding of the particular characteristics and effects of the drug groups in question,
- distinguish between different ways of effectiveness,
- distinguish between possible applications with regards to their effect,
- comment on misuse of drugs (doping, addictive potential)
- explain the importance of structure-function-relations for pharmacokinetics and pharmacodynamics
- reflect upon necessary applications of the drug groups in question
- make use of individual drugs during treatment and as an antidote

DISINFECTION PHARMACOLOGY L (1H) [41]

Students should be able to:

[40] 1.18
[41] 1.29

- assign and reproduce terms from the field of disinfection and classify disinfectants into different classes and assess them with regard to their mode of action, application possibilities and toxicity
- know the specifics of (veterinary) wound, skin and hand disinfection
- have knowledge of disinfectant lists and recommendations of the DVG, the VAH and the RKI

CENTRAL AND PERIPHERAL MUSCLE RELAXANTS L (1H) [42]

Students should be able to:

- explain the mode of action of the substances
- derive the possible uses of the substances
- explain the risks and ADRs
- justify the countermeasures

CLINIC FOR PIGS (INTERNAL MEDICINE AND SURGERY) (REINER ET AL.)

AUJESZKY'S DISEASE L (1H) [43]

Students should be able to:

- provide a structured overview on the major diseases of the CNS of the pig and compare and rate the individual diseases clinically, therapeutically and economicall
- explain the aetiology and pathogenesis of diseases and list all disease-specific facts
- name the clinical, pathologic-anatomical and histological symptoms and apply these to the development of the disease and the prognosi
- list possible and important differential diagnosis for the diseases, rate their probability and name diagnostic approaches to their differentiation
- initiate a disease- and case-related diagnostic plan and discuss possible results
- demonstrate suitable therapeutic measures for meta- and prophylaxis
- rate the economic relevance of the diseases

PORCINE ERYSIPELAS L (1H) [44]

Students should be able to:

- discuss the aetiology and pathogenesis of erysipelas and define the specific characteristics of this disease

[42] 1.18, 1.30

[43] 1.1, 1.18, 1.21, 1.24

[44] 1.1, 1.18, 1.21, 1.24

- name the clinical, pathologic-anatomical and histological symptoms and apply these to the development of the disease and the prognosis
- list possible and important differential diagnoses concerning erysipelas and name diagnostic approaches to their differentiation
- initiate a disease- and case-related diagnostic plan and discuss possible results
- demonstrate suitable therapeutic measures for meta-and prophylaxis
- rate the economic relevance of the disease

European and African Swine Fever L (1h) [45]

Students should be able to:

- explain the aetiology and pathogenesis of European and African swine fever, highlighting the disease-specific feature
- name the clinical as well as the pathological anatomical and histological symptoms and apply these with regard to the course of the disease and prognosis
- list possible and important differential diagnoses of European and African swine fever, evaluate their probability and name diagnostic approaches for their differentiation
- initiate a disease- and case-related diagnosis and discuss possible results
- identify suitable therapeutic measures as well as meta- and prophylactic measures and weigh their suitability against each other
- evaluate the economic relevance of the diseases

Miscellaneous

Clinical demonstrations S (2h) [46]

The content of the clinical demonstrations will refer to the patients currently treated in the clinics and thus are unknown in advance.

Disinfection, movement in the OR (Cross Sectional Subject) (2h) [47]

Students should be able to:

- list and apply necessary hygienic steps in the field of surgery
- Identify all definitions relevant to hygiene

[45] 1.1, 1.18, 1.21, 1.24

[46] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

[47] 1.29

General Surgery (Cross Sectional Subject) (1h) [48]

Students should be able to:

- describe the different phases of wound healing and the systemic inflammatory response of the body and recognise the manifestation of different surgical diseases (abscess, haematoma, etc.)
- explain the different techniques of tissue and instrument handling as well as the basic information about suture material and the most important suturing techniques
- name different possibilities of haemostasis

Suture Material Suturing Techniques (Cross Sectional Subject) (1h)

Students should be able to:

- list the different suture materials
- relate the suturing techniques for specific indications

Lymphoreticular System

Summary:

The organ block "lymphoreticular system " will provide an overview of its organs such as spleen, bone marrow, blood, etc. and then compare specific diseases (anaemia, clotting disorders) an discuss selected tumours (lymphoma, haemangiosarcoma). In addition, clinical immunology will be discussed in collaboration with the paraclinical institutes.

Further details (e.g. reading list) concerning the courses can be found online:
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/studium

Courses in detail:

Institute of Pharmacology and Toxicology (Geyer et al.)

Pharmacology Blood L (2h) [49]

Students should be able to:

- classify anaemias and blood coagulation disorders into different forms and recognise their significance

[48] 1.29

[49] 1.18

- demonstrate knowledge of the causes and development of anaemia and blood coagulation disorders
- differentiate between various substances used for the therapy of anaemia or blood coagulation disorders with regard to their effects, indications and ADRs and evaluate them for therapeutic use

CYTOTOXIC DRUGS L (1H) [50]

Students should be able to:

- weigh different therapeutic approaches based on various modes of action of the active pharmaceutical ingredient
- argue about the usage of the mentioned drugs based on the pathological and patho-physiological conditions of tumour diseases

INSTITUTE OF VETERINARY PATHOLOGY (HERDEN, ET AL.)

PATHOLOGY OF BONE MARROW, THYMUS, SPLEEN, LYMPH NODES, LEUKAEMIA L (2H) [51]

Students should be able to:

- identify the pathological processes and developments in domestic animals
- explain the entities relating to the individual organ systems
- define and classify the diseases and explain them comprehensively in connection with the clinical appearance
- explain the aetiology and pathogenesis of these developments, as well as confirm the correct morphological diagnoses and discuss differential diagnoses

CLINIC FOR SMALL ANIMALS (INTERNAL MEDICINE AND SURGERY) (KRAMER, PEPPLER, THIEL, MORITZ, ET AL.)

HAEMATOPOIETIC SYSTEM L (1H) [52]

Students should be able to:

- describe indications and the procedure of a bone marrow aspiration
- describe specification of kinetics in various blood cells
- classify haematopoietic neoplasm

[50] 1.18

[51] 1.21, 1.24, 1.33

[52] 1.21

ANAEMIA L (1H) [53]

Students should be able to:

- discuss in a problem-oriented way patients with pale mucous membranes,
- recognize the requirement of a blood analysis, perform and interpret a blood smear (semi quantitative evaluation)
- classify the causes of anaemia
- name the patho-mechanisms that cause the different types of anaemia and classify them according to these causes
- transfer the changes in blood counts given as examples to real cases and thereby interpret them

BLOOD CLOTTING OF ALL SPECIES L (2H) [54]

Students should be able to:

- define and explain the stages of blood clotting (primary and secondary haemostasis fibrinolysis / coagulation inhibitors)
- define and explain the main tests of blood clotting (platelet number / function tests in particular mucosal bleeding time / APTT, PT, D-Dimer, fibrinogen, anti thrombin),
- interpret clinical findings of coagulopathies / thrombosis
- interpret the results of the tests mentioned above
- list the main causes of inherent and acquired disorders in haemostasis (decreased / increased coagulant activity)
- deduce the main therapeutic approaches for patients with clotting disorders

BLOOD TRANSFUSION L (2H) [55]

Students should be able to:

- adduce a conceptual definition of the term “blood transfusion” and list indications and contraindications to carry out a blood transfusion
- define the different forms of anaemia in terms of their frequency of occurrence and create an adequate therapy schedule
- list the different blood transfusion components (whole blood, blood components, blood substitutes), name their active substances, and list indications for the choice of each substance

[53] 1.21

[54] 1.18, 1.21

[55] 1.18

- define the fundamentals of obtaining a blood sample for the purposes of a blood transfusion and describe the procedure of a blood transfusion itself
- list the different blood group systems of dogs and cats and discuss various methods for blood typing including their advantages and disadvantages
- classify transfusion reactions with regard to their causes (immunological, non-immunological), describe the clinical symptoms of a transfusion reaction and list measures that have to be taken in case of intolerance

LYMPHORETICULAR SURGERY L (1H) [56]

Students should be able to:

- derive and assess diseases of the lymphoreticular system
- name the most important surgical options

FELV + FIV L (1H) [57]

Students should be able to:

- explain the aetiology, transmission and clinical symptoms of FeLV infection and differentiate between the various types of infection
- explain the tricks in the diagnostics of FeLV infection
- discuss the therapeutic options and prophylaxis against FeLV
- explain the aetiology, transmission and clinical symptoms of FIV infection as well as diagnostics
- discuss the interpretation of titre results
- discuss management and treatment options for the FIV-positive cat

FIP L (1H) [58]

Students should be able to:

- discuss the epidemiology and clinic of feline coronavirus (FCoV)
- discuss the diagnostic possibilities for FCoV and FIP
- discuss the significance of positive and negative coronavirus titres and their interpretation in healthy cats and cats with FIP
- discuss therapeutic approaches to FIP and prevention

[56] 1.18

[57] 1.18, 1.21

[58] 1.18, 1.21

IMPORTED INFECTIOUS DISEASES L (2H) [59]

Students should be able to:

- inform the owners about possible diseases in foreign countries. In particular, this requires knowledge of endemic areas, showing the owners infectious pathways and strategies in the prevention of imported diseases
- name drugs for the prevention of diseases transmitted by blood-sucking vectors
- (acaricides, repellents), discuss indications for available blood test and perform and interpret a blood smear (semi quantitative analysis)
- describe the vectors, the pathogens and the clinical symptoms of imported diseases,
- explain the diagnosis and treatment of leishmaniasis, ehrlichiosis, dirofilariosis and hepatozoonosis
- allocate haematological examples (e.g. hyperglobulinaemia) to various imported infectious diseases

THROMBOCYTES L (1H) [60]

Students should be able to:

- explain thrombopoiesis
- explain the causes and the pathophysiology of thrombocytopenia
- describe the symptoms of immune-mediated thrombocytopenia and recommend treatment methods
- name the differential diagnosis for a bleeding tendency
- name the various causes of thrombocytopathy
- describe platelet function tests

ONCOLOGY L (4H) [61]

a) Fundamentals of tumour biology and chemotherapy

Learning objectives:

- Understanding of tumour biology (oncogenes, carcinogenesis, tumour models, acquired properties of tumour cells)
- Fundamentals of understanding "multi-step" oncogenesis (tumour genes, promoters, growth factors, tumour milieu)
- Fundamentals of chemotherapy (Gompertzian growth kinetics, hypothesis of fractional cell killing, therapeutic index, "ideal" therapy, chemotherapy resistance)

[59] 1.18, 1.21

[60] 1.18, 1.21

[61] 1.18, 1.21

b) Clinical work-up of the tumour patient

Learning objectives:

- Anamnesis, staging
- General principles in the diagnosis of skin tumours
- Biopsy techniques as a basis for tissue diagnosis
- Cytology and histology
- Paraneoplastic syndromes

c) Malignant lymphoma of the dog

Learning objectives:

- Understanding the tumour biology of a haematopoietic (systemic) tumour
- Clinical manifestations of malignant lymphoma in dogs
- Diagnostic procedure, staging and chemotherapy

d) Mast cell tumour

Learning objectives:

- Clinical manifestations and diagnostics of mast cell tumours
- Significance of the classification into "tumour grades
- Importance of staging a tumour that is treatable with different modalities (surgery, radiation, chemotherapy, TK inhibitors) depending on the grade, location and tumour stage
- Understanding of multimodality therapy

SHOCK L (2H) [62]

Students should be able to:

- diagnose shock and recognise the form it takes
- initiate the initial care of the patient

REANIMATION L (1H) [63]

Students should be able to:

- have knowledge of basic and advanced life support in cardiovascular arrest
- initiate first aid for the patient

[62] 1.18, 1.19

[63] 1.19

Clinic for Horses (Internal Medicine and Surgery) (Fey, Roscher, Röcken et al.)

Special haematology horse L (2h) [64]

Students should be able to:

- explain haematological and inflammatory changes in the clinical chemistry of the horse
- name the most important causes of anaemia in the adult horse, elucidate the pathogenetic background and list the basics of therapy

Clinic for Ruminants (Internal Medicine and Surgery) (Sickinger et al.)

Lymphoreticular system Cattle L (1h) [65]

Students should be able to:

- describe the causes and main symptoms of BLAD and enzootic leucosis
- name possible methods of differential diagnostics, treatment and prevention of the two diseases in question

Clinic for Pigs (Internal Medicine and Surgery) (Reiner et al.)

PMWS L (1h) [66]

Students should be able to:

- explain the aetiology and pathogenesis of the porcine multi systemic wasting syndrome (PMWS) and point out the particularities of the disease
- name the clinical as well as the pathologic-anatomical and histological symptoms and to apply these with regard to the development of the disease and the prognosis
- list potential and important differential diagnoses of PMWS, rate the occurence and give diagnostic approaches to their classification
- initiate a disease- and case-related diagnostic plan and discuss possible results
- define and rate appropriate therapeutic measures as well as measures for meta- and prophylaxis and weigh the suitability of methods
- rate the economic relevance of the disease

[64] 1.18, 1.21, 1.24

[65] 1.1, 1.18, 1.21, 1.24

[66] 1.1, 1.18, 1.21

PDNS L (1H) [67]

Students should be able to:

- explain the aetiology and pathogenesis of porcine dermatitis and nephropathy syndrome (PDNS), highlighting the disease-specific features
- name the clinical as well as the pathological anatomical and histological symptoms and apply these with regard to the course of the disease and prognosis
- list possible and important differential diagnoses of PDNS, evaluate their probability and name diagnostic approaches to differentiate between them
- initiate a disease- and case-related diagnosis and discuss possible results
- identify suitable therapeutic measures as well as meta- and prophylactic measures and weigh their suitability against each other
- evaluate the economic relevance of the diseases

Clinic for Reproduction (Wehrend et al.)

Immunology of newborns L (1H) [68]

Students should be able to:

- describe immunological conditions of foetuses and newborns and explain their importance for the development of diseases
- list, define and explain diagnosis, treatment and prevention of disorders of the immune system in newborns

Miscellaneous

Clinical demonstrations S (6H) [69]

The content of the clinical demonstrations will refer to the patients currently treated in the clinics and thus are unknown in advance.

Blood smears and blood parasites (Cross Sectional Subject) (5H) [70]

Students should be able to:

- perform a blood smears and stain rapidly by Diff-Quik

[67] 1.1, 1.18, 1.21

[68] 1.18, 1.21

[69] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

[70] 1.18, 1.21

- name the main stains of blood smears to create a differential cell image or a reticulocyte coun
- evaluate blood cells (erythrocytes, platelets, leucocyte populations)
- list the most important haematological characteristics that are specific to dogs, cats, horses, cattle and swine
- name therapeutic concepts for babesiosis, leishmaniasis and dirofilariasis,
- list possibilities of prophylaxis
- name the most important blood parasites of the dog and cat and describe their pathways of transmission
- describe the epidemiological situation (endemic, non-endemic regions
- recognize blood parasites in blood smears, and fine needle aspirates of bone marrow or lymph nodes

LYMPHOMA HORSE (CROSS SECTIONAL SUBJECT) (1H) [71]

Students should be able to:

- know the particularities of the clinical expression of malignant lymphoma in horses and can list the diagnostic possibilities
- know the pathological-anatomical and -histological peculiarities of malignant lymphoma in horses and the relevant differential diagnoses
- apply the classifications of malignant lymphomas of domestic animals in equid
- place the typical organ changes in malignant lymphomas in horses in the clinical context
- know the possibilities of immunohistological differentiation of tumour cells

LYMPHOMA SMALL ANIMAL (CROSS SECTIONAL SUBJECT) (1H) [72]

Students should be able to:

- list the clinical symptoms and possible differential diagnoses for dogs with lymphoma
- list the different forms of canine lymphoma based on clinical localisation of development
- list the differences in the most common localisation of the neoplastic developments of dogs and horses
- list and explain the most important examinations for establishing the diagnosis
- list the most important immune-histochemical classifications of lymphoma subtype
- list the most important factors that influence the prognosis
- list possible therapeutic measures for dogs and explain them together with their advantages and disadvantages (median survival rate, side effects, costs)

[71] 1.18, 1.21

[72] 1.18, 1.21

- explain the differences in therapeutic measures concerning horses in comparison with small animals

Lymphoma Large Animal (Cross Sectional Subject) (1h) [73]

Students should be able to:

- discuss the epidemiology of bovine leucosis
- discuss the course of the disease (incl. clinic) of bovine leukosis
- know the differences between bovine leucosis and lymphoma in other species
- list the prophylactic measures of enzootic leucosis
- know the pathological-anatomical and -histological features of leukosis in ruminants and the relevant differential diagnoses
- apply the classifications of malignant lymphomas of domestic animals in ruminants
- place the typical organ changes in the clinical context

Clinical Pathology (Cross Sectional Subject) (4h) [74]

Students should be able to:

- describe and explain the benefits and application of clinical pathological tests when examining healthy and sick animals for diagnosis, prognosis and development monitoring,
- apply the terminology and appropriate units
- identify pre-analytical, analytical and post-analytical errors
- describe the morphology and function of erythrocytes, leucocytes, and platelets
- identify and discuss the main haematological changes
- list and explain the most relevant coagulation tests
- perform, stain and evaluate a blood smear

Vaccination Horse (Cross Sectional Subject) (1h) [75]

Students should be able to:

- list the "core" vaccinations in horses and describe the associated diseases
- name the "non-core" vaccinations in horses
- name the vaccinations required by the German Equestrian Federation for participation in competitions
- receive current information on vaccines and vaccination recommendations

[73] 1.18, 1.21, 1.24

[74] 1.21

[75] 1.36

VACCINATION SMALL ANIMAL (CROSS SECTIONAL SUBJECT) (1H) [76]

Students should be able to:

- conduct a vaccination discussion with a cat or dog owner
- list core and non-core vaccinations and explain them
- explain the difference between basic immunisation and booster shots
- explain the benefits and side-effects of vaccinations
- educate the owner about vaccination in chronically ill or immunosuppressed animals and know the advantages and disadvantages of titre determinations as an alternative to regular repeat vaccination

IMMUNOLOGY (CROSS SECTIONAL SUBJECT) (6H)

The aim of the course is the presentation of the processes on the molecular level that take place in the context of an inflammatory reaction, in particular the function of neutrophil granulocytes in the inflammatory process. At the centre of interest is leucocyte migration (rolling, adhesion, diapedesis migration) with its underlying mechanisms and messenger substances (integrins, selectins, chemokines etc.) as well as the description of the phagocytic qualities of neutrophil granulocytes. Furthermore, there is a short excursus on bovine leucocyte adhesion deficiency (BLAD), a genetic mutation with the effects of immunodeficiency.

Students should be able to:

- describe the different steps of leucocyte migration in the course of an inflammatory event, and explain the underlying molecular mechanisms
- define the functions of neutrophil granulocytes, in particular the phagocytosis activity of these cells and describe the individual steps of phagocytosis
- discuss non-specific, antimicrobial effector mechanisms in addition to the phagocytosis properties of neutrophil granulocytes
- classify the disease of bovine leucocyte adhesion deficiency (BLAD) and explain it with regard to its genesis and effects

[76] 1.36

DERMATOLOGY

Summary:

Dermatological diseases are among the most common reasons for animals being taken to a vet. These also include skin wounds and their treatment. The understanding of the clinical findings (primary and secondary skin lesions) is a prerequisite for the initiation of further diagnostic steps. Pathological findings, in combination with clinical findings, are in some cases necessary to initiate the correct treatment. In pharmacology of dermatological products, important knowledge concerning the medication used will be given.

Further details (e.g. reading list) concerning the courses can be found online:
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/studium

Courses in detail:

INSTITUTE OF PHARMACOLOGY AND TOXICOLOGY (GEYER ET AL.)

ANTIFUNGALS L (1H) [77]

Students should be able to:

- derive the possible uses of the drugs
- define the areas of application
- explain risks of application
- explain the specifications of the drugs
- apply the fundamentals of pharmacokinetics

INSTITUTE OF VETERINARY PATHOLOGY (HERDEN, ET AL.)

PATHOLOGY SKIN L (5H) [78]

Students should be able to:

- identify the pathological processes and developments in domestic animals
- explain the entities relating to the individual organ systems
- define and classify the diseases and explain them comprehensively in connection with the clinical appearance
- explain the aetiology and pathogenesis of these developments, as well as confirm the correct morphological diagnoses and discuss differential diagnoses

[77] 1.18

[78] 1.21, 1.24, 1.33

Clinic for Small Animals (Internal Medicine and Surgery) (Kramer, Moritz, Bauer, Thom, Peppler, Thiel et al.)

Dermatological Examination L (1h) [79]

Students should be able to:

- perform a systematic clinical examination including history and dermatological examination
- differentiate between, classify and assess primary and secondary skin lesions
- on the basis of the knowledge acquired, discuss differential diagnoses
- list diagnostic tests available

Parasitic skin diseases seen from a clinical perspective, L (2h) [80]

Students should be able to:

- recognize the most important ectoparasites of dogs and cats and their clinical symptoms,
- demonstrate testing methods that can be used in order to prove certain ectoparasites,
- transfer fundamental knowledge from parasitology concerning life cycles to therapeutic and prophylactic measures.

Otitis - Internal Medicine L (2h) [81]

Students should be able to:

- take a good history and perform a general and dermatological investigation of the "ear-patient", as well as recognize the necessity of diagnosing possible underlying dermatological diseases
- describe the theoretical otoscopic examination and interpret its findings
- decide which cases demand further examination, and what kind of examination is most suitable
- interpret the results of the microscopic examination of the cerumen
- decide how to treat the various cases

Alopecia L (2h) [82]

Students should be able to:

- conduct the examination of a patient with non-inflammatory alopecia
- identify differential diagnoses of bilateral symmetric alopecia

[79] 1.17, 1.21

[80] 1.18, 1.21, 1.24

[81] 1.15, 1.17, 1.18, 1.21

[82] 1.18, 1.21

- list clinical developments of hypothyroidism and hyperadrenocorticis
- define and explain hypothyroidism and hyperadrenocorticism as well as follicular dysplasia

DERMATOLOGY- SMALL MAMMALS L (1H) [83]

Students should be able to:

- by means of an clinical image, derive and classify possible causes of diseases and determine which disease is more or less common in which animal species
- convey similarities in diagnosis and therapy that concern more than one species
- correctly interpret physiologic dermatological features of individual species

DERMATOMYCOSES - SMALL ANIMALS L (1H) [84]

Students should be able to:

- explain the most important dermatophytoses of cats and dogs
- define and describe clinical lesions associated with dermatophytes
- interpret and apply appropriate diagnostic tests
- compile treatment plans
- list subcutaneous and systemic mycoses
- describe the clinical signs of a yeast infection, apply and interpret appropriate diagnostic tests

ALLERGIES I L (1H) [85]

Students should be able to:

- explain the clinical signs of allergic skin diseases in dogs and cats
- identify miliary dermatitis in a cat
- list and recognise the forms of eosinophilic reaction in the cat
- list three causes of symmetric alopecia in a cat
- list the various components of the skin immune system and explain their function in the skin's defence response
- list examples of allergies and describe clinical and histological changes (atopic dermatitis, flea bite allergy, food intolerance)
- explain the diagnostic pathway and differential diagnoses of atopic dermatitis in dogs

[83] 1.18, 1.21

[84] 1.18, 1.21

[85] 1.21

ALLERGIES II L (1H) [86]

Students should be able to:

- list the major and minor criteria for the diagnosis of atopic dermatitis in a dog (Willemse, Prelaud, Favrot criteria)
- list diagnostic methods for the diagnosis of atopic dermatitis and food intolerance and present their indications, advantages and disadvantages
- explain the principle of desensitisation
- name indications and different options for the treatment of atopy
- describe the principle of treatment of flea bite allergy

BACTERIAL AND VIRAL SKIN DISEASES L (3H) [87]

Students should be able to:

- explain the different forms of pyoderma (surface, superficial and deep pyoderma)
- define and explain specific types of bacterial pyoderma (folliculitis, imdomestic animaligo, intertrigo, pyotraumatic dermatitis, chin-acne)
- list the most commonly involved bacteria, and explain the significance of opportunistic bacteria
- discuss the diagnosis (which tests and questions are helpful) and treatment of bacterial infections in general (when systemic treatment, when local treatment)
- asses, rate and interpret cytologic samples obtained by different methods (impression smear, FNA, cellotape)
- evaluate the relevance of different treatments (local creams, shampoos, systemic therapy) with regard to their advantages and disadvantages
- list symptoms of bacterial pyoderma in dogs and cats, as well as several potential primary diseases
- discuss the diagnosis and significance of multi-resistant and zoonotic bacteria (MRSA, MRSP, pseudomonas spp., mycobacteria) and comprehensively explain to the owners
- discuss the diagnosis and significance of viral pathogens (canine and feline papillomaviruses, poxviruses, distemper viruses, feline herpes virus, calicivirus, leukaemia virus)

NEOPLASTIC AND METABOLIC SKIN DISEASES L (1H) [88]

Students should get an overview of the different diseases. They will be familiar with the typical clinical picture and be able to address the respective disease as a differential diagnosis

[86] 1.18, 1.21

[87] 1.18, 1.21, 1.24

[88] 1.21

Immune-related Dermatoses L (2h)[89]

Students should be able to:

- discuss the treatment of pemphigus and discoid lupus erythematosus (DLE)
- assess/interpret laboratory findings for monitoring azathioprine and chlorambucil
- list symptoms of pemphigus foliaceus (PF) and DLE and their therapies
- define and explain the pathogenesis of pemphigus and DLE

Surgery Skin Wounds I Wounds in General L (1h) [90]

Students should be able to:

- name the different aetiologies
- classify wounds according to their degree of infection
- list the main points of primary wound care

Surgery of skin wounds II - Bite wounds L (1h) [91]

Students should be able to:

- explain the pathophysiology of a bite wound
- explain main features of a surgical treatment of a bite wound

Surgery Skin Wounds III Special Wounds L (1h) [92]

Students should be able to:

- name the different diagnostic possibilities for acute and chronic stick injuries
- describe the therapy of the injury

Otitis - Surgery L (1h) [93]

Students should be able to:

- list and match anatomical structures
- discuss the principles of surgery concerning the external ear canal and the middle ear
- list the main diseases of the external ear canal and the middle ear

[89] 1.18, 1.21

[90] 1.18, 1.29

[91] 1.18

[92] 1.18

[93] 1.18

SKIN CYTOLOGY L (1H) [94]

Students should be able to:

- name the indications and limitations of a cytological examination
- explain techniques and performance of a fine needle aspirate depending on site and size of the abnormality
- list staining procedures for cytological specimens including their advantages and disadvantages
- list and explain physiological structures in a skin impression smears
- list and discuss inflammatory cells and types (purulent, granulomatous etc.) and the most important etiological reasons for their occurrence
- name and interpret recognizable microorganisms in cytological assessments
- classify and interpret recognizable microorganisms of cytological examinations
- list cytological characteristics of a pemphigus foliaceus
- list the main criteria for malignancy
- name cytological characteristics of epithelial, mesenchymal and round cell tumours
- list examples for benign and malignant epithelial skin tumours
- recognize and describe the main types of round cells (mast cells, lymphoid blasts, histiocytes and melanocytes)

CLINIC FOR HORSES (FEY, ROSCHER, RÖCKEN ET AL.)

DERMATOLOGY - HORSES I L (1H) [95]

Students should be able to:

- work up the anamneses of equine skin diseases
- list the diagnostic possibilities
- name basic therapeutic options

DERMATOLOGY - HORSES II L (1H) [96]

Students should be able to:

- recognise important infectious skin diseases of the horse on the basis of the clinical picture or know which diagnostic steps have to be taken for clarification
- name the most important specific active substances for the therapy of equine skin diseases of infectious origin

[94] 1.21

[95] 1.15, 1.18, 1.21

[96] 1.18, 1.21

- list additive therapy measures

Dermatology - Horses III L (1h) [97]

Students should be able to:

- name important immunologically caused skin diseases of the horse and explain the underlying pathomechanisms
- list the differential diagnostic steps to clarify immune-related skin diseases
- name the most important therapeutic agents for the treatment of immunologically caused skin diseases in horses

Dermatology – Horses IV L (1h) [98]

Students should be able to:

- assess the pathogenicity of neoplastic changes (e.g. equine sarcoid, melanoma, squamous cell carcinoma, mast cell tumour)
- name diagnostic measures
- name and evaluate rare but impressive disease patterns manifesting on the skin

Wound Care - Horses L (2h) [99]

Students should be able to:

- explain the systematic diagnostic procedure for wounds and injuries
- describe essential aspects of wound healing in horses
- name the topical wound treatments in horses based on these aspects
- know the most important dressing materials and describe dressing techniques
- name the suture materials and drains required for wound closure in horses
- describe general and specific suturing techniques
- describe the most important aspects of reconstructive wound surgery and skin grafting
- explain relevant complications of wound healing

Neoplasia Skin - Horses L (1h) [100]

Students should be able to:

- recognise the different forms of skin tumours in horses

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[97] 1.18, 1.21

[98] 1.21

[99] 1.18, 1.29

[100] 1.18, 1.21

- explain the systematic procedure for the diagnostic examination of horses with skin tumours
- name the different therapeutic options for skin tumours in horses

Clinic for Pigs (Internal Medicine and Surgery) (Reiner et al.)

FMD L (1h) [101]

Students should be able to:

- explain the aetiology and pathogenesis of foot and mouth disease (FMD) and identify the special features of this disease
- name the clinical and pathological, anatomical and histological symptoms and apply these with regard to the development and the prognosis of the disease
- list possible and important differential diagnoses of FMD, rate their probability and list possible approaches to their classification
- induce a disease- and case-related diagnostic plan and discuss possible results,
- weigh appropriate therapeutic measures and measures for meta-and prophylaxis and the suitability of the methods
- rate the economic relevance of the diseases

Exudative Epidermitis L (1h) [102]

Students should be able to:

- explain the aetiology and pathogenesis of the disease and point out the special features of this disease
- name the clinical and pathological, anatomical and histological symptoms and apply these with regard to the development and the prognosis of the disease
- induce a disease- and case-related diagnostic and discuss possible results
- weigh appropriate therapeutic measures and measures for meta-and prophylaxis and the suitability of the methods
- rate the economic relevance of the diseases

Scabies L(1h) [103]

Students should be able to:

[101] 1.1, 1.18, 1.21, 1.24

[102] 1.1, 1.18, 1.21

[103] 1.1, 1.18, 1.21, 1.24

- explain the aetiology and pathogenesis of scabies and point out the special features of this disease
- name the clinical and pathological, anatomical and histological symptoms and apply these with regard to the development and the prognosis of the disease
- list possible and important differential diagnoses of scabies, rate their probability and list possible approaches to their classification
- induce a disease- and case-related diagnostic and discuss possible results
- weigh appropriate therapeutic measures and measures for meta-and prophylaxis and the suitability of the methods
- rate the economic relevance of the diseases

DERMATOLOGY - MISCELLANEOUS L (1H) [104]

Students should be able to:

- explain the aetiology and pathogenesis of important dermatological diseases in pigs and point out the special features of these diseases
- name the clinical and pathological, anatomical and histological symptoms and apply these with regard to the development and the prognosis of the disease
- list possible and important differential diagnoses of dermatoses, rate their probability and list possible approaches to their classification
- induce a disease- and case-related diagnostic and discuss possible results
- weigh appropriate therapeutic measures and measures for meta-and prophylaxis and the suitability of the methods
- rate the economic relevance of the diseases

CLINIC FOR RUMINANTS (SURGERY AND INTERNAL) (SICKINGER ET AL.)

DERMATOLOGY - RUMINANTS: GENERAL INFORMATION L (1H) [105]

Students should be able to:

- rate the importance of bovine skin as an industrial natural resource (leather, gelatine)
- recognize the symptoms and causes of technopathics (husbandry or transport related skin alterations)
- describe the causes, characteristics, treatment and prophylaxis of the following diseases: depigmentation of hair (copper deficiency), hair loss and photosensitive reactions

[104] 1.1, 1.18, 1.21

[105] 1.1, 1.18, 1.21, 1.24

DERMATOLOGY - RUMINANTS: PARASITES L (1H) [106]

Students should be able to:

- name the clinic, economic impact, diagnosis, differential diagnosis, therapy and prophylaxis of the following parasite-induced skin diseases in ruminants:
    - mallophaga and lice infestation
    - sarcoptes mange, psoroptes mange and chorioptes mange
    - demodicosis
    - myiasis

DERMATOLOGY RUMINANTS- VIRUSES/BACTERIA L (1H) [107]

Students should be able to:

- name the clinic, economic impact, diagnosis, differential diagnosis, therapy and prophylaxis of the following viral and bacterial skin lesions in ruminants:
    - Papillomatosis
    - Stomatitis papulosa
    - Ecthyma contagiosum
    - Lumpy skin
    - Udder-thigh dermatitis
    - Dermatitis digitalis

DERMATOLOGY - RUMINANTS: ACTINOBACILLOSIS /ACTINOMYCOSIS AND TRICHOPHYTIA [108]

Students should be able to:

- name the causes, types and localisation and possibilities of differential diagnosis of actinobacillosis and actinomycosis in cattle and small ruminants
- provide a prognosis of both diseases and the various treatment methods
- name the causes, clinical features, differential diagnosis and methods to diagnose trichophytoses
- describe the zoonotic potential of these diseases
- describe the prognosis, treatment measures and prophylactic measures, including vaccination

[106] 1.1, 1.18, 1.21, 1.24

[107] 1.1, 1.18, 1.21, 1.24

[108] 1.1, 1.18, 1.21, 1.24

DERMATOLOGY - RUMINANTS: TAIL TIP NECROSIS L (1H) [109]

Students should be able to:

- describe the causes, symptoms and prognosis of tail tip necrosis in cattle
- describe possible conservative and surgical treatment methods
- identify measures of prophylaxis for this disease, with special regard to the relevant animal protection law

MISCELLANEOUS

CLINICAL DEMONSTRATIONS S (6H) [110]

The content of the clinical demonstrations will refer to the patients currently treated in the clinics and thus are unknown in advance.

CYTOLOGY (CROSS SECTIONAL SUBJECT) (3H) [111]

Students should be able to:

- name the indications and limits of cytological examinations
- explain the preparation and staining of cytological specimens
- list and discuss inflammatory cell types and types of infection (purulent, granulomatous etc.) and the most important etiological causes for their occurrence
- name cytological characteristics of epithelial, mesenchymal tumours and round cell tumours
- recognize and describe the cytological characteristics of important skin tumours in dogs (lipoma, mast cell, dermal connection cyst)
- identify and describe the cytological characteristics of pemphigus foliaceus in dogs
- recognize and describe the most important round cell types (mast cells, lymphoid blasts, histiocytes and melanocytes)

[109] 1.1, 1.18, 1.21, 1.24

[110] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

[111] 1.21

Summary:
Operations on animals can only be performed under sufficient anaesthesia. Pharmacology conveys an understanding of the application of anaesthetics, hypnotics, sedatives and analgesia. To ensure that anaesthesia can take place without complications, the various types and techniques of anaesthesia and monitoring will be illustrated. For dogs, cats, horses and cattle species-specific differences of anaesthesia will be discussed.

Courses in detail:

INSTITUTE OF PHARMACOLOGY AND TOXICOLOGY (GEYER ET AL.)

LOCAL ANAESTHETICS L (1H) [112]

Students should be able to:

- elucidate the particular structures of pain fibres for the selective effect of local anaesthetics in sensible as compared to motoric nerve fibres
- explain the importance of the voltage dependent sodium channel for therapy and toxicology
- undertake a clinical and conceptual distinction of peripheral pain elimination, central analgesia in spinal marrow and loss of consciousness seizure (hypnosis, narcosis) via different substance classes
- recognize the therapeutic relevance of pharmacokinetics, metabolisation and lipophilicity in local anaesthetics

NARCOTICS: INHALATION + INJECTION L (1H) [113]

Students should be able to:

- demonstrate understanding of the effects and side effects of injectable and inhalable narcotics; recognise differences in effects
- develop possible uses based on effects
- critically assess the dangers of uncritical use
- learn the importance of pharmacokinetics
- reflect on the necessary and possible use
- assess co-medication and antagonization

[112] 1.31
[113] 1.30

Opioid Analgesics L (1h) [114]

Students should be able to:

- derive and delimit the possible uses of opioids
- define areas of application
- explain differences in effect due to pharmacodynamic and pharmacokinetic peculiarities
- explain addiction and abuse potential and apply antagonisation

Barbiturates, Anticonvulsants L (1h) [115]

Students should be able to:

- describe the pharmacology of the GABA(A) receptor
- explain the differences between hypnosis and anaesthesia
- derive the use of barbiturates
- assess and explain the potential for dependence
- explain the areas of application including euthanasia

Minor Tranquilizers, Ataractics L (1h) [116]

Students should be able to:

- demonstrate a critical understanding of the specifics of the effect of minor tranquilizer
- explain the meaning of the term ataraxia
- describe differences in effects between ataraxia and sedation
- name possible uses based on the effects
- criticise misuse (addictive potential)
- reflect the necessary use of benzodiazepines

Major Tranquilizers, Neuroleptics L (1h) [117]

Students should be able to:

- derive and delimit the (veterinary) possible uses of neuroleptics
- define areas of application
- explain the differences in effect of the different classes of substances due to pharmacodynamic and pharmacokinetic characteristics
- explain addiction and abuse potential and apply antagonization

[114] 1.30, 1.31

[115] 1.30, 1.32

[116] 1.30

[117] 1.30

SMALL ANALGESICS, ALPHA2- AGONISTS L (1H) [118]

Students should be able to:

- explain the mode of action and differences between the various classes of substances on the basis of pharmacokinetic and pharmacodynamic properties and differentiate them from other analgesics
- define areas of application, veterinary uses and adverse drug reactions including animal species specifics
- antagonise the effect of alpha2-agonists

CLINIC FOR SMALL ANIMALS (INTERNAL MEDICINE AND SURGERY) (TACKE ET AL.)

ANAESTHESIA - SMALL ANIMALS: BASICS OF ANAESTHESIA L (1H) [119]

Students should be able to:

- explain the terms sedation, hypnosis, narcosis, analgesia and anaesthesia
- define the stages of anaesthesia, perform a pre-anaesthetic examination and carry out an ASA classification

ANAESTHESIA - SMALL ANIMALS: LOCAL ANAESTHESIA L (1H) [120]

Students should be able to:

- explain the term local anaesthesia
- choose the suitable medication and dosages and know how to combine local anaesthetics with opioids or alpha 2 agonists
- choose the appropriate local anaesthesia for particular surgical procedures
- explain the differences of surface and infiltration anaesthesia and peripheral and central nerve blockage
- explain the effects and side effects of local anaesthetics and analgesics

ANAESTHESIA - SMALL ANIMALS: INHALATION ANAESTHESIA L (1H) [121]

Students should be able to:

- explain advantages and disadvantages of inhalation anaesthesia

[118] 1.30, 1.31

[119] 1.30

[120] 1.30, 1.31

[121] 1.30

- describe the concept of MAC and know the legal pharmaceutical prerequisites of the use of volatile anaesthetics
- describe the protection of the respiratory passages
- describe the various anaesthetic systems and their advantages and disadvantages

ANAESTHESIA - SMALL ANIMALS: VENTILATION, MONITORING L (1H) [122]

Students should be able to:

- explain the indications, advantages and disadvantages of ventilation
- explain the different forms of ventilation (IPPV, PEEP, CPAP, SIMV)
- explain the different forms of monitoring (pulse palpation, auscultation, capnography, electrocardiography, blood pressure, pulse oximetry, pulse plethysmography, blood gas analysis)
- describe the various forms of invasive and non-invasive monitoring
- interpret the readings that were obtained
- interpret a capnogram

ANAESTHESIA - DOG L (1H) [123]

Students should be able to:

- choose the anaesthesia, anaesthetics and monitoring that is suitable for the patient in question with regard to different symptoms in dogs
- calculate the required dosage and interpret the course of the anaesthesia

ANAESTHESIA - CAT L (1H) [124]

Students should be able to:

- choose the anaesthesia, anaesthetics and monitoring that is suitable for the patient in question with regard to different symptoms in cat
- calculate the required dosage and interpret the course of the anaesthesia

ANAESTHESIA - RISK PATIENT L (1H) [125]

Students should be able to:

- choose suitable forms of anaesthesia and anaesthetics for patients at risk

[122] 1.30

[123] 1.30

[124] 1.30

[125] 1.30

- calculate the required dosage and choose the necessary monitoring of the patient

Clinic for Horses (Fey, Roscher, Röcken et al.)

Anaesthesia - Horses L (2h) [126]

Students should be able to:

- explain the preparation and performance of general anaesthesia in horses
- name different sedation and general anaesthesia protocols
- name the standard equipment used for anaesthesia monitoring and explain the corresponding functions
- name the most common complications during anaesthesia and explain treatment options

Clinic for Ruminants (Surgery and Internal) (Sickinger et al.)

Anaesthesia - cattle L (1h) [127]

Students should be able to:

- name the various procedures of local anaesthesia such as surface, conduction, infiltration and intravenous congestion anaesthesia as well as the general anaesthetic of ruminants and the indications
- describe appropriate methods of anaesthesia for the following surgical procedures:
    - surgery of the head; dehorning, evisceration of the orbit, tongue operations
    - surgery in the field of distal limbs
    - laparotomy
    - navel operations
    - tail amputation

Miscellaneous

Clinical demonstrations S (2h)[128]

The content of the clinical demonstrations will refer to the patients currently treated in the clinics and thus are unknown in advance.

[126] 1.30

[127] 1.30, 1.31

[128] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

Summary:
Diseases of the musculoskeletal system are among the most common reasons for examinations of small animals and horses. At the beginning of the block anatomical and physiological basics are rehearsed and deepened. The general and specific clinical examination of the locomoter system are prerequisites for an appropriate therapy. They are the basis for further diagnostic steps such as imaging procedures and laboratory examinations. Obtaining a thorough knowledge of common diseases of the musculoskeletal system in domestic animal species, but also their diagnostics and therapy are the focus in this course.

Further details regarding courses (e.g. reading list) can be found online at:
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/studium

Courses in detail:

INSTITUTE OF PHARMACOLOGY AND TOXICOLOGY (GEYER ET AL.)

NSAID L (1H) [129]

Students should be able to:

- derive and define the usefulness of these substances
- evaluate and justify the risks of the application
- name the major differences of the substance classes
- apply the fundamentals of pharmacokinetics

PHARMACOLOGY IMMUNOSUPPRESSANTS L (1H) [130]

Students should be able to:

- explain the differences between the four different types of allergy
- explain the drug-specific sites of action of immunosuppressants
- state specific indications for individual immunosuppressants

[129] 1.18, 1.31
[130] 1.18

GLUCOCORTICOIDS L (1H) [131]

Students should be able to:

- classify the substances pharmacologically and outline their usefulness
- define the fields of application and the benefits of glucocorticoids
- assess the potential risks in the case of an overdose
- explain the so-called non-steroidal effects of steroid hormones
- evaluate alternatives to a glucocorticoid therapy

INSTITUTE OF VETERINARY PATHOLOGY (HERDEN, ET AL.)

PATHOLOGY MUSCULAR SKELETAL AND LOCOMOTOR SYSTEM (3H) [132]

Students should be able to:

- identify the pathological processes and developments in domestic animals
- explain the entities relating to the individual organ systems
- define and classify the diseases and explain them comprehensively in connection with the clinical appearance
- explain the aetiology and pathogenesis of these developments, as well as confirm the correct morphological diagnoses and discuss differential diagnoses

CNS / PNS L (5H) [133]

Students should be able to:

- identify the pathological processes and developments in domestic animals
- explain the entities relating to the individual organ systems
- define and classify the diseases and explain them comprehensively in connection with the clinical appearance
- explain the aetiology and pathogenesis of these developments, as well as confirm the correct morphological diagnoses and discuss differential diagnoses

[131] 1.18, 1.31

[132] 1.21, 1.24, 1.33

[133] 1.21, 1.24, 1.33

Clinic for Small Animals (Internal Medicine and Surgery) (Kramer, Moritz, Peppler, Thiel, Schmidt et al.)

Orthopaedic examination of small animals L (1h) [134]

Students should be able to:

- perform a clinical orthopaedic examination
- relate certain orthopaedic diseases to appropriate methods of investigation
- deduce the significance of lameness

X-ray fundamentals L (1h) [135]

Students should be able to:

- define standard examinations
- define normal findings

X-ray - small animal L (1h) [136]

Students should be able to:

- recognize and define different types of fractures in radiographs
- name the different levels of fraction healing

Further diagnostics locomotor system - small animals L (1h) [137]

Students should be able to:

- assess and evaluate possible diagnostic methods
- define and explain diagnostic possibilities

Sectional imaging basics L (1h) [138]

Students should be able to:

- describe the basics of CT and MRI and name common areas of application

[134] 1.17
[135] 1.23
[136] 1.23
[137] 1.23
[138] 1.23

MRI / CT scintigraphy L (1h) [139]

Students should be able to:

- define the general physical fundamentals of CT, MRI and scintigraphy
- deduce and list indications for the individual methods

Pain therapy L (2h) [140]

Students should be able to:

- assess and define pain in dogs, cats and other pets
- perform an analgesia that is adapted to the patient

Joint diseases - small animal L (1h) [141]

Students should be able to:

- describe and evaluate the different forms of dislocations
- list possible therapeutic measures
- list the most important disorders of the hip joint and demonstrate therapeutic measures

Hip and Elbow Joint Dysplasia HD/ED L (1h) [142]

Students should be able to:

- name the diagnostic steps of HD and ED
- explain different therapeutic approaches

Arthritis / degenerative joint disease (DJD) L (1h) [143]

Students should be able to:

- define rheumatoid and non-rheumatoid arthritis
- list the types of arthritis and name possibilities for their differentiation
- define the terms “DJD” and “arthritis”
- explain the significance of arthritis of the different joints with regard to the symptoms
- list and assess different therapeutic options

[139] 1.23

[140] 1.18, 1.31

[141] 1.18, 1.23

[142] 1.18, 1.23

[143] 1.18, 1.23

KNEE - SMALL ANIMAL L (1H) [144]

Students should be able to:

- depict the aetiology of the cruciate ligament rupture and name various therapeutic methods
- describe the nature and scale of patella luxation and list possible surgical forms of therapy

LIGAMENT INJURIES CARPUS/TARSUS - SMALL ANIMAL L (1H) [145]

Students should be able to:

- differentiate between various injuries in the carpal / tarsal joint area and name therapeutic options
- name the basics of arthrodesis

PAW - SMALL ANIMALS L (1H) [146]

Students should be able to:

- enumerate the most common inflammatory and neoplastic diseases of the paw
- name the special characteristics of fracture treatment, as well as the treatment of dislocations

TENDONS, MUSCLES - SMALL ANIMAL L (1H) [147]

Students should be able to:

- derive the different forms and localisations of the various muscle and tendon diseases
- name the possibilities of surgical therapy
- define the terms "contracture", "tendinosis", "tendovaginitis"

BANDAGE THEORY L (1H) [148]

Students should be able to:

- define, describe and perform various bandage techniques and types in the different species

[144] 1.18, 1.23

[145] 1.18, 1.23

[146] 1.18, 1.23

[147] 1.18, 1.23

[148] 1.18

FRACTURES L (1H) [149]

Students should be able to:

- describe and classify fractures
- deduce the principles of primary and secondary bone healing
- assess the boundaries and possibilities of conservative fracture treatment
- name implants and list indications for their application
- define and explain the terms “biological” and “stable” osteosynthesis

FRACTURE TREATMENT - SMALL ANIMALS L (2H) [150]

Students should be able to:

- differentiate between those forms of fracture that are classified as “difficult” and those that are considered “simple”
- match individual types of fractures to the possible forms of osteosynthesis

METABOLIC BONE DISEASES L (1H) [151]

Students should be able to:

- name different metabolic bone diseases
- explain the different therapies of each metabolic diseases

SMALL MAMMALS I + II LOCOMOTOR SYSTEM L (2H) [152]

Students should be able to:

- name the principles of the locomotor system examination in small mammals
- list the most common diseases of the locomotor system in small mammals and explain individual forms in further detail
- name methods of further diagnostics in small mammals
- list possible forms of therapy for the individual diseases mentioned

PHYSIOTHERAPY L (4H) [153]

Students should be able to:

- define and explain the term "physiotherapy"

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[149] 1.18, 1.23

[150] 1.18, 1.23

[151] 1.18, 1.21, 1.23

[152] 1.18, 1.23

[153] 1.18

- state its main applications in orthopaedics and neurology
- create a treatment programme involving physiotherapy
- perform a physiotherapeutic examination
- list indications for physiotherapy

Neurology- Small Animal: Functional Anatomy of the CNS, Neurolocalisation L (1h)[154]

Students should be able to:

- list the breed predispositions of the most important neurological diseases
- distinguish between UMN and OMN
- list all reflexes and explain their physiology

Neurology - Small Animal: Gait Analysis Ataxia vs. Paresis L (2h) [155]

Students should be able to:

- make a neurolocalisation on the basis of analyses of the gait and neurological disorders

Neurology - Small Animal: Vestibular Syndrome L (1h) [156]

Students should be able to:

- present findings for central and peripheral vestibular syndrome
- list differential diagnoses for VS
- interpret the findings of diagnostic imaging procedures

Neurology - Small Animal: Epilepsy L (3h) [157]

Students should be able to:

- recognise the different manifestations of epilepsy
- list the possible differential diagnoses for epileptic seizures
- explain the necessary diagnostic measures
- know the medicinal treatment of epilepsy

[154] 1.18

[155] 1.17

[156] 1.18, 1.23

[157] 1.18, 1.23

NEUROLOGY - SMALL ANIMAL: INFLAMMATORY BRAIN DISORDERS L (1H) [158]

Students should be able to:

- list breed predispositions of the most important inflammatory conditions
- list the relevant medication
- explain effects and side effects of these drugs

NEUROLOGY - SMALL ANIMAL: TREATMENT OF INTERNAL HYDROCEPHALUS L (1H) [159]

Students should be able to:

- present the symptoms for hydrocephalus
- recommend an appropriate treatment option
- explain the procedure for a ventriculo-peritoneal shunt
- assess prognosis and complications

NEUROLOGY - SMALL ANIMAL: WOBBLER SYNDROME/ATLANTOAXIAL MALFORMATION L (1H) [160]

Students should be able to:

- explain the different morphological changes of the spine that can lead to the Wobbler syndrome

NEUROLOGY - SMALL ANIMAL: INTERVERTEBRAL DISC DISEASES L (1H)[161]

Students should be able to:

- explain the different diseases caused by disc degeneration
- explain the diagnosis of cervical, thoracolumbar and lumbosacral disc diseases
- explain the basic principles of decompressive interventions
- explain the basic techniques of spondylodesis
- relate the different surgical techniques to the pathophysiological changes

NEUROLOGY - SMALL ANIMAL: BRAIN TUMOURS L (1H) [162]

Students should be able to:

- name the different forms of brain tumours

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[158] 1.18, 1.23

[159] 1.18, 1.23

[160] 1.23

[161] 1.18, 1,23

[162] 1.18, 1,23

- assess the biological behaviour of brain tumours
- rate the treatability of brain tumours

NEUROLOGY - SMALL ANIMAL: CAUDA EQUINA COMPRESSION SYNDROME L (1H) [163]

Students should be able to:

- name imaging findings in cauda equina problems
- name the classic symptoms of diseased dogs and distinguish them from differential diagnoses
- explain the principle of dorsal laminectomy

NEUROLOGY - SMALL ANIMAL: FRACTURES SPINE L (1H) [164]

Students should be able to:

- explain the basic principles and the advantages and disadvantages of neurosurgical stabilisation techniques

OPHTHALMOLOGY - SMALL ANIMAL: EYELID, CONJUNCTIVA, CORNEA L (3H) [165]

Students should be able to:

- list and define diseases of the eyelids, the conjunctiva and nictitating membrane as well as those of the cornea
- list characteristic findings of the specific diseases and suggest the appropriate therapeutic measures
- define the basic principles of diseases of the eyelid and adnexa
- name the diagnostic agent of choice as well as the appropriate therapy regarding diseases of the eyelid

OPHTHALMOLOGY - SMALL ANIMAL: CORNEAL DISEASE L (1H) [166]

Students should be able to:

- name the most important corneal diseases in dogs and cats
- list the necessary diagnostic steps and possible therapies

[163] 1.18, 1,23

[164] 1.18, 1,23

[165] 1.18, 1.21

[166] 1.18, 1.21

Ophthalmology - Small Animal: Tumours, KCS L (1h) [167]

Students should be able to:

- list the most common tumours in the area of the eye
- name the treatment options for a KCS

Ophthalmology - Small Animal: Methods L (1h) [168]

Students should be able to:

- name the different methods of diagnostics

Ophthalmology - Small Animal: Lens, Anterior Chamber, Retina L (1h) [169]

Students should be able to:

- name the most important diseases of the lens, anterior chamber and retina in dogs and cats
- list the necessary diagnostic steps for these diseases and possible therapie

Clinic for horses (Fey, Roscher, Röcken et al.)

Osteoarthritis - Horses L (1h) [170]

Students should be able to:

classify the term osteoarthritis
name the different elements of pathogenesis
describe clinical symptoms and diagnostic procedures
name and weigh up therapeutic options

OCD - Horses L (1h) [171]

Students should be able to:

- explain the genesis and diagnostic procedure of equine OCD
- describe the essential clinical and imaging findings of the disease
- describe the therapeutic measures resulting from these findings

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[167] 1.18, 1.21

[168] 1.21

[169] 1.18, 1.21

[170] 1.18, 1.21, 1.23

[171] 1.18, 1.21, 1.23

Subchondral Bone Cysts - Horses L (1h) [172]

Students should be able to:

- explain the genesis and the diagnostic procedure of equine subchondral bone cysts
- describe the essential clinical and imaging findings of the disease
- describe the resulting therapeutic options

Tendopathies and Desmopathies - Horses L (1h) [173]

Students should be able to:

- classify the terms tendinopathy and desmopathy
- name the different elements of pathogenesis
- describe clinical symptoms and diagnostic procedures
- name and weigh up therapeutic options

Fractures - Horses L (1h) [174]

Students should be able to:

- explain the key points in the initial treatment of horses with fractures
- explain the particularities of the immobilisation of the individual limb dissections to be observed
- explain the structure and application of an immobilising limb bandage (cast bandage; splint bandage)
- describe the procedure for the appropriate transport of a horse with a fracture
- explain the basic principles of osteosynthesis: lag screw, plating, wire cerclage
- explain the basic principle of the locking plate
- name the special challenges of fracture care and osteosynthesis in the horse species

Hoof Diseases - Horses L (2h) [175]

Students should be able to:

- explain the systematic diagnostic procedure for diseases of the hoof
- recognise important clinical findings in equine hoof diseases
- name the most important diseases of the hoof in horses
- describe the therapeutic measures based on these findings

[172] 1.18, 1.21, 1.23

[173] 1.18, 1.21, 1.23

[174] 1.18, 1.21, 1.23

[175] 1.18, 1.21, 1.23

Toe - Horses L (1h) [176]

Students should be able to:

- explain the systematic diagnostic procedure for diseases of the toe and explain
- recognise important clinical findings in equine diseases of the toe
- name the most important diseases of the toe in horses
- describe the therapeutic measures based on these findings

Metacarpus/Metatarsus - Horse L (2h) [177]

Students should be able to:

- differentiate the diseases of the metatarsus
- explain the most important principles of fracture treatment in the metatarsal region
- list the diagnostic criteria and the frequency of occurrence of the tendopathies/ desmopathies
- describe the therapeutic measures based on these criteria

Carpus, elbow joint, shoulder - Horse L (1h) [178]

Students should be able to:

- explain the systematic diagnostic procedures for diseases of the carpus, elbow joint and shoulder in horses
- describe essential clinical and imaging findings in diseases of the carpus, elbow joint and shoulder in horses
- name the most important diseases of the carpus, elbow joint and shoulder in horses
- recognise the nerve damage (radial and suprascapular nerve)
- describe the therapeutic measures based on these findings

Tarsus, knee - Horses L (1h) [179]

Students should be able to:

- explain the systematic diagnostic procedure for diseases of the tarsus and knee in horses
- describe the most important clinical and imaging findings in equine tarsus and knee diseases
- name the most important diseases of the tarsus and knee in horses

[176] 1.18, 1.21, 1.23

[177] 1.18, 1.21, 1.23

[178] 1.18, 1.21, 1.23

[179] 1.18, 1.21, 1.23

- describe the therapeutic measures based on these findings

Hip Joint, Sacrum, Pelvis - HorsesL (1h) [180]

Students should be able to:

- explain the systematic diagnostic procedure for diseases of the hip joint, the sacroiliac joint and the pelvis in horses
- describe essential clinical and imaging findings in diseases of the hip joint, the sacroiliac joint and the pelvis in horses
- name the most important diseases of the hip joint, the sacroiliac joint and the pelvis in horses
- describe the therapeutic measures based on these findings

Neck, Back - Horse L (1h) [181]

Students should be able to:

- explain the systematic diagnostic procedure for diseases of the neck and back in horses
- describe the most important clinical and imaging findings in equine neck and back diseases
- name the most important diseases of the neck and back in horses
- describe the therapeutic measures based on them

Myopathy - Horses L (1h) [182]

Students should be able to:

- name the diagnostic possibilities for muscular diseases of the horse and the most important, internally relevant load-induced and non-load-induced muscular diseases of the horse, examine pathogenetic backgrounds and list basic therapeutic options

Neurology - Horses L(2h) [183]

Students should be able to:

- name the most important, internally relevant CNS diseases of the horse, highlight pathogenetic correlations and therapeutic options and give a prognostic assessment

[180] 1.18, 1.21, 1.23

[181] 1.18, 1.21, 1.23

[182] 1.18, 1.21

[183] 1.18

OPHTHALMOLOGY - HORSE L(1H) [184]

Students should be able to:

- explain the systematic procedure for clinical eye examination in horses
- describe the most important clinical and imaging findings in diseases of the equine eye
- name the most important diseases of the equine eye
- describe the therapeutic measures based on these findings

CLINIC FOR RUMINANTS (INTERNAL MEDICINE AND SURGERY) (SICKINGER ET AL.)

ORTHOPAEDIC EXAMINATION OF CATTLE L (1H) [185]

Students should be able to:

- recognise lameness on the basis of characteristic features and name the degrees or forms of lameness
- undertake an assessment and examination of the claw
- palpatorically assess joints and synovial tendon sheaths
- describe the findings of normal and abnormal synovial fluid

TENDONS, MUSCLES - RUMINANTS L (1H) [186]

Students should be able to:

- name the causes, clinical symptoms, further diagnostic methods, therapy and prophylaxis of the following disorders of tendons and muscles in cattle and small ruminants:
  - Neuromyodysplasia congenita
  - Spastic paresis
  - Spinal muscle atrophy
  - Spinal dysmyelogenesis
  - Weaver Syndrome
  - Myodystrophy caused by vitamine E and selenium deficiency

HOOF INFECTION - RUMINANTS L (1H) [187]

Students should be able to:

[184] 1.17, 1.18, 1.23

[185] 1.1, 1.17, 1.21

[186] 1.1, 1.18, 1.21, 1.23

[187] 1.1, 1.18, 1.23

- discuss the meaning of claw/hoof diseases, as well as recognize the following claw/hoof diseases, describe their causes and name possible measures for their therapy and prophylaxis:
    - Laminitis
    - Dermatitis digitalis, Dermatitis interdigitalis
    - Interdigital phlegmon
    - Whiteline disease
    - Limax
    - Rusterholz ulcer

NEUROLOGY / OPHTHALMOLOGY - RUMINANTS L (1H) [188]

Students should be able to:

- diagnose the following diseases of the CNS and sensory organ and discuss their respective therapy and prophylaxis based on the clinical finding:
    - BEF
    - Rabies
    - Visna
    - CAE
    - BSE
    - Scrapie
    - Infectious bovine keratoconjunctivitis
    - Cancer eye
    - Otitis media

CLINIC FOR PIGS (INTERNAL MEDICINE AND SURGERY) (REINER ET AL.)

PORCINE CLAWS AND JOINTS L (1H) [189]

Students should be able to:

- provide a structured overview of the major diseases of the locomotor system of pigs and evaluate the individual diseases clinically, therapeutically and economically
- explain the aetiology and pathogenesis of these diseases and point out their characteristic features
- name the clinical as well as the pathological, anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis

[188] 1.1, 1.18, 1.21, 1.24

[189] 1.1, 1.18, 1.21

- list possible and important differential diagnoses for these diseases, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of these methods
- rate the economic relevance of the diseases

GLASSER'S DISEASE L (1H) [190]

Students should be able to:

- explain the aetiology and pathogenesis of Glasser's disease and identify the special features of this disease
- name the clinical and pathological, anatomical and histological symptoms and apply these with regard to the development and the prognosis of the disease
- list possible and important differential diagnoses of Glasser's disease, rate their probability and list possible approaches to their classification
- induce a disease- and case-related diagnostic and discuss possible results
- weigh appropriate therapeutic measures and measures for meta-and prophylaxis and the suitability of the methods
- rate the economic relevance of the diseases

PORCINE MUSCLES L (1H) [191]

Students should be able to:

- provide a structured overview of the most important myopathies of pigs,
- and evaluate individual diseases clinically, therapeutically and economically
- explain the aetiology and pathogenesis of these diseases and identify their special features
- name the clinical and pathological, anatomical and histological symptoms and apply these with regard to the development and the prognosis of the disease
- list possible and important differential diagnoses for the diseases, rate their probability and list possible approaches to their classification
- initiate diagnostics for this specific disease and case and discuss possible results
- weigh appropriate therapeutic measures and measures for meta-and prophylaxis and the suitability of the methods
- rate the economic relevance of the diseases

[190] 1.1, 1.18, 1.21

[191] 1.1, 1.18, 1.21

PORCINE CNS L (1H) [192]

Students should be able to:

- provide a structured overview of the most important diseases of the CNS of pigs and evaluate individual diseases clinically, therapeutically and economically
- explain the aetiology and pathogenesis of these diseases and identify their special features
- name the clinical and pathological, anatomical and histological symptoms and apply these with regard to the development and the prognosis of the disease
- list possible and important differential diagnoses for the diseases, rate their probability and list possible approaches to their classification
- initiate diagnostics for this specific disease and case and discuss possible results
- weigh appropriate therapeutic measures and measures for meta-and prophylaxis and the suitability of the methods
- rate the economic relevance of the diseases

MISCELLANEOUS

CLINICAL DEMONSTRATIONS S (12H) [193]

The content of the clinical demonstrations will refer to the patients currently treated in the clinics and thus are unknown in advance.

REPETITORIUM PHYSIOLOGY MUSCULOSKELETAL SYSTEM AND SYNOVIA (CROSS SECTIONAL SUBJECT) (1H) [194]

Students should be able to:

- define the physiological structure of joints and the composition and function of synovia
- describe the main inflammatory and non-inflammatory joint diseases
- explain the laboratory diagnostic examination of synovia

REPETITORIUM ANATOMY AND PHYSIOLOGY EYE (CROSS SECTIONAL SUBJECT) (2H)

Students should be able to:

- understand the functional anatomy of the eye
- understand the functioning of the dioptric apparatus
- define the formation of aqueous humour and the pathophysiology of glaucoma

[192] 1.1, 1.18, 1.21, 1.24

[193] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

[194] 1.21

Imaging Diagnostics Musculoskeletal System - Large Animal (Cross Sectional Subject) (2h) [195]

Students should be able to:

- evaluate the quality and diagnostic value of radiographs
- correctly diagnose fractures on the basis of radiographs and discuss possibilities of therapy
- reproduce the principles of plate osteosynthesis
- make statements on healing time and prognosis

Bone Substitute Materials (Cross Sectional Subject) (2h) - Use of bone substitute materials, anatomy and surgery

Students should be able to:

- explain the different terms such as osteoinduction, osteoconduction
- name different scaffold materials for bone substitution

Fracture Treatment (Cross Sectional Subject) (2h)[196]

Students should be able to:

- define, classify and explain fractures
- assess and diagnose fractures
- describe the imaging findings of a fracture and the fracture conformation
- explain the principles of fracture treatment
- discuss the therapy and prognosis of fractures

Bandaging techniques small animals, ruminants, horses (Cross Sectional Subject) (3h)[197]

Students should be able to:

- define, describe and perform specific bandaging techniques and
- types concerning different species

[195] 1.18, 1.23

[196] 1.18, 1.23

[197] 1.18

PHARMACEUTICAL AND DRUG PROHIBITION LAW [198]

Coordinator:
Hamann

Instructor:
Hamann

Course type:
lecture (1,071 CHW)

ECTS:
1

Introduction:
- the right to dispense pharmaceutical drugs by the veterinarian; the requirements for running a pharmacy: the tierärztliche Hausapothekenverordnung (TÄHAV)
- the German drug law: what are medicinal products (mp)? Definitions, real/fictional drugs, authorisation of mp, registration of homeopathic drugs
- the application/dispensation of mp: marketability of mp, how to dispense drugs only available on prescription (so called “rezeptieren”)
- critical mp, deception, report of unexpected adverse drug reactions, “Stufenplanverfahren”, pharmacovigilance
- shortage of mp, shortage of therapy and redeployment of pharmacy-only mp
- the use of mp for animals that are used for food production: EU Regulation 470/2009: Rückstandshöchstmengen-VO, latency period
- the effects of EU-regulations on the veterinary practice ("Rosa Liste"), medicated foodstuff, documentation for veterinary drugs
- the use of mp on horses, the equine pass, the "positive list"
- legal regulations that are relevant for the veterinarian when using narcotics (Betäubungsmittelgesetz (German Narcotics Act)), the regulations concerning the prescription of narcotics
- BTM-Binnenhandelsverordnung (the narcotic internal trade regulation), BTM-Außenhandelsverordnung (the narcotic foreign trade regulation)
- hazardous substances in the veterinary pharmacy/practice

[198] 1.3, 1.10, 1.25, 1.26, 1.27

- the requirements for the production of mp in the veterinary pharmacy: knowledge in labelling (package insert, expert information), pricing, storage, disposal of medicines
- the requirements for the production of medicines in the veterinary pharmacy: knowledge in galenics
- the use of medical devices in the veterinary practice

Overall aims and objectives:

Students should be able to:

- assess mp with regard to current laws and regulations, discuss the possibilities of authorisation or registration
- define certain terms (e.g., mp, medicated foodstuff, pre-mixtures of medicine, rededication, shortage of therapy, etc.)
- explain the channels of distribution for mp/narcotics
- classify mp regarding their marketability
- enumerate and explain the requirements for the registration and running of a veterinary pharmacy (TÄHA) according to the tierärztliche Hausapothekenverordnung
- name and assess the requirements for the purchase, storage, release, and application of veterinary mp (including narcotics) in accordance with current laws and regulations
- rate and evaluate the different legal situations when treating food-producing animals and pets with mp
- list documentation of the purchase, dispensation, application and, where applicable, the appropriate disposal of mp and narcotics, respectively
- explain the necessary measures that have to be taken in order to report unexpected adverse drug reactions to the appropriate authority
- explain the obligation to inform (such as indication on waiting periods) to animal holders
- name the requirements for the production of mp in the veterinary pharmacy (TÄHA)
- choose appropriate mp for their respective disease patterns and prescribe according to the current laws and regulations
- recognize substances as hazardous and handle these according to current laws and regulations
- recognize medical products and handle these according to current laws and regulations

Reading List:

- Zrenner, Paintner, Bert: Arzneimittelrechtliche Vorschriften für Tierärzte und einschlägige Vorschriften anderer Rechtsreiche, Deutscher Apotheker Verlag, ISBN-13: 9783769243192

Electronic sources:

Veterinary information service on the use of medicinal products, toxicology and pharmaceutical regulations:

www.vetidata.de

Scripts:

See StudIP:

https://studip.uni-giessen.de

Learning recommendations:

attending the lectures; preparation with the help of the lecture notes (slides on Stud.IP); learning the material with the help of the textbooks

Assessment:

a written or oral exam in the subject of medicinal products and narcotics law after the 6th semester; partial exam; practical exam: production of medicinal products (galenics) 6th semester

Prescribing of Medicines: Preparation of Medicines[199]

Coordinator:

Hamann

Instructor:

Hamann

Course type:

Practical (1,572)

ECTS

3

Prerequisites:

Attendance of the lecture in pharmacopoeia

Introduction:

- Discussion of the legal requirements for the manufacture of medicinal products
- Packaging, labelling, price calculation, testing, disposal of mp
- Introduction to common activities in drug production (e.g. weighing techniques, mortaring, dissolving, filtering, sterilising)
- Safety instruction according to the Ordinance on Hazardous Substances
- Production of sterile solutions

[199] 1.3, 1.10, 1.25, 1.26, 1.27, 128

- Production of powders, divided powders, powders in capsules
- Production of suspensions, suspension ointments
- Production of solution ointments, creams and gels
- Examination: Production of 2 medicinal products according to prescription, labelling, production control, calculation of price of medicinal products according to applicable regulations, questions on galenics

Overall aims and objectives:

Students should be able to:

- carry out pharmaceutical work techniques (e.g. weighing, mortaring, sterilising)
- prepare certain dosage forms (e.g. liquid dosage forms, solid dosage forms, spreadable dermatics) and package them
- label medicinal products in accordance with legal requirements
- calculate the price of medicinal products in accordance with the legal requirements
- test medicinal products in accordance with the legal requirements
- dispose of medicinal products in accordance with legal requirements
- correctly issue normal prescriptions, narcotic prescriptions, feeding drug prescriptions and application and dispensing documentation

Reading list:

- Schöffling, Ursula; Arzneiformenlehre Ein Lehrbuch der Galenik, Publisher: Deutscher Apotheker Verlag 2009, 5th revised and expanded edition, ISBN-10: 3769240936, ISBN-13: 9783769240931
- Wurm, Gisela; Galenische Übungen für das technologische Praktikum und die pharmazeutische Praxis, Publisher: Govi-Verlag, 17th revised edition (2001), ISBN-10: 3774109044, ISBN-13: 978-3774109049

Scripts:

On the homepage of the institute 2 scripts are provided for download:

1. practical course instructions for the production of medicinal products.
2. information on the substances and dosage forms used in the course

https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/pharmatox/lehre

Learning recommendations:

- elaboration and consolidation of the contents of the practicals (scripts)
- attendance of the lectures
- preparation with the help of the slides presented in the practicals (Stud.IP)
- learning the material with the help of the textbooks

Assessment:
a written and practical exam (20%) during the sixth semester as part of the Veterinary Medical Examination in "Pharmaceutical and Narcotics Law"

PRESCRIPTION THEORY: PRESCRIBING[200]

Coordinator:
Hamann

Instructor:
Hamann

Prerequisites:
attendance of the lecture in pharmacopoeia

Introduction:
- formal criteria for the prescription of medicinal products for use in pets and food-producing animals
- criteria for the selection of medicinal products
- redesignation and dose conversion of human medicinal product - veterinary medicinal product
- prescription of anaesthetics
- prescription of medicated feedingstuffs
- records in accordance with the Veterinary Home Pharmacy Ordinance (e.g. §13 Obligation to Provide Evidence) and the Medicinal Products Act - Medicinal product application and dispensing documentation

Overall aims and objectives:
Students should be able to:
- select medicinal products for the corresponding animal species and the corresponding clinical picture and to prescribe them according to the legal requirements
- keep records on the acquisition, testing, dispensing and use of medicinal products and anaesthetics
- apply acquired knowledge on drug selection when prescribing drugs for animals
- convert the dose of a human medicinal product for a specific animal body weight in the case of a required redesignation
- correctly issue normal prescriptions, narcotic prescriptions, medicated feeding prescriptions and application and dispensing documentation

[200] 1.3, 1.10, 1.25, 1.26, 1.27

Reading list:
Medicines Act, Narcotics Act, Ordinance on Veterinary Home Pharmacies, Medicines Prescription Ordinance, Narcotics Prescription Ordinance, Vetidata, Rote Liste Online

Learning recommendations:
elaboration and consolidation of the contents of the exercises (scripts), attendance of the lectures; preparation with the help of the slides presented in the exercises (Stud.IP)

Assessment:
a written and practical exam (20%) during the sixth semester as part of the Veterinary Medical Examination in "Pharmaceutical and Narcotics Law"

MEAT AND FOOD HYGIENE [201]

Coordinator:
Kehrenberg

Instructors:
Kehrenberg, Zens and scientific staff

Course type:
lecture (2 CHW)
ECTS:
2

Requirements:
none

Introduction:
The course serves:

- as an introduction to the topic of meat and food hygiene
- as a continuation of the curriculum of “Bacteriology, Mycology and Virology”
- as a preparation for the practical “Ante mortem and post mortem inspection" and "Food safety evaluation and technology"

Overall aims and objectives:
Students should be able to:

[201] 1.1, 1.3, 1.10, 1.21, 1.24, 1.29, 1.34, 1.35

- explain the principles of food safety (risk analysis and HACCP concept)
- explain the hygiene and technology of meat production (Schlachtlinien)
- give an overview on the horizontal and vertical meat and food hygiene law (EU-regulation and national laws and regulation types)
- explain the fundamentals of official food control (structure and functions of the official veterinarian)
- explain the fundamentals of food microbiology (influence on survival and neutralisation of microorganisms)
- give an overview of the damage to health caused by foodstuff (dangers, including substances that form residues and contaminants)
- explain the fundamentals of food spoilage (of a microbial as well as non-bacterial nature)
- explain the possibilities of the preservation of foodstuff of animal origin (production and storage)
- give an overview of the commodities of foodstuff of animal origin (definitions, classification and systematics)

Reading List:

- K. Fehlhaber, J. Kleer, F. Kley (Hrsg.): Handbuch Lebensmittelhygiene (2007), Behr‘s Verlag, ISBN: 978-3-89947-194-6
- H.-J. Sinell (Hrsg.): Einführung in die Lebensmittelhygiene (2003), Parey Verlag, ISBN: 3830440952

Electronic sources:

see StudIP:

https://studip.uni-giessen.de

Scripts:

"Handouts / Downloads" for each lecture block are available on the homepage of the IFTN. Scripts for meat and food evaluation can be obtained at the IFTN

https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/nahrungsmittelkunde/institut/studium

Self-assessment:

A questionnaire is available on the homepage of the IFTN.

Learning recommendations:

Students are advised to prepare and revise the content with the help of the respective handouts and in-depth reading of the relevant literature.

Assessment:

an oral examination within the framework of the Veterinary Medical examination in "Meat hygiene" after the eleventh semester

DAIRY SCIENCE [202]

Coordinator:
Usleber

Instructors:
Usleber, Akineden

Course Type:
lecture (1 CHW)

ECTS:
1

Introduction:
Economic framework conditions of the dairy industry, the relevance of milk and dairy products for human nutrition, anatomical and physiological fundamentals of milk production, ingredients of milk, milk intolerance, fundamental of milk production and milk hygiene, quality of raw milk, legal requirements for primary production, milk quality assessment

Overall aims and objectives:
Students should be able to:

- explain the national and international relevance of milk and dairy products for human nutrition and assess the national economic relevance of the dairy industry,
- explain the development of milk constituents of the most important species and define the normal values,
- explain the most important milk constituents and assess them with regard to physical-chemical, technological and nutritional properties of milk,
- deduce the fundamentals of agricultural milk production, discuss those with regard to the production of high-quality and completely hygienic raw milk as well as the relevant regulations.

Electronic sources:
Presentations of the course contents as well as the texts of the corresponding legal regulations are available for download in StudIP as "pdf files" with self-explanatory file names. Title of the course: "Lecture: presentations of the lecture content are available in PDF-format on Stud.IP
https://studip.uni-giessen.de

[202] 1.3, 1.10, 1.21, 1.24, 1.35

Assessment:
a written examination after the 7th semester (together with the contents of the courses "Milk Science II" and "Milk Examination Course" of the 7th semester)

ANIMAL NUTRITION PRACTICAL [203]

Coordinator:
Ringseis

Instructor:
Ringseis

Course type:
Practical (2 CHW)

ECTS:
3

Prerequisites:
Successful completion of the veterinary preliminary examination and attendance of the courses on animal feed science and animal nutrition in the 2nd and 5th semester.

Introduction:
The "Practicals in animal nutrition" build on the one-hour lecture on feed science (2nd semester) and the two-hour lecture on animal nutrition (5th semester).
In terms of content, the focus of the course is on animal species-specific nutritional requirements (energy and nutrient requirements) and animal species-specific feeding practices (ration design, feeding methods, feeding techniques, dietetics in nutrition-associated diseases).
Animal species discussed are: dogs, cats, rabbits, guinea pigs, pigs (sows, piglets, fattening pigs), cattle (dairy cows, calves, fattening cattle), horses, poultry.

Overall aims and objectives:
Students should be able to:

- explain the nutritional requirements (energy and nutrient requirements) of dogs, cats, rabbits, guinea pigs, pigs, cattle, horses and poultry

[203] 1.10, 1.20, 1.28

- explain the digestive and metabolic characteristics of dogs, cats, rabbits, guinea pigs, pigs, cattle, horses and poultry
- explain the feeding of dogs, cats, rabbits, guinea pigs, pigs, cattle, horses and poultry
- explain dietary strategies for the treatment of nutritionally associated diseases in dogs, cats, rabbits, guinea pigs, pigs, cattle, horses and poultry

Reading list:

- Kamphues, J., Coenen, M., Kienzle, E., Pallauf, J., Simon, O., Zentek, J.: Supplemente zu Vorlesungen und Übungen in der Tierernährung
- Kirchgessner, M.: Tierernährung

Electronic learning materials:

Power Point presentations in Stud.IP
https://studip.uni-giessen.de

Assessment:

- TAppV Prerequisite TP certificates “Practicals in animal nutrition” at the end of the 6th semester: written examination
- part of the Veterinary medical Examination in animal nutrition: written exam

7TH SEMESTER

BLOCKS	WEEKS	ECTS
Respiration	4	4
Cardiovascular	3	3
Gastrointestinaltract	8	8
REGULAR COURSES	CHW	ECTS
Forensic Veterinary Medicine, Professional and ethical law **L**	1	1
Diseases of Fish, Reptiles and Amphibians **L**	1	1
Meat Hygiene and Food Science **L**	4	4
Poultry Diseases **L**	1	1
Dairy Science **L**	1	1
Milk Examination **S/P**	1	2
Pathological-anatomical Demonstrations **P**	1	1.5
Radiology **L**	2	2
Inspection Of Animals For Slaughter And Meat Inspection **P**	2	2
Animal Welfare **L**	2	2
Elective Courses		
EXAMINATIONS		ECTS
Examination Radiology		2
Examination Animal Welfare and Ethology		2
Examination “Dairy science”		2
Partial Examination MCQ Internal Medicine		
Partial Examination MCQ Surgery and Anaesthesiology		

Partial Examination MCQ Reproductive Medicine		

L= lecture, P= practical, S= seminar
CHW= contact hour per week (Semesterwochenstunde)
ECTS= European Credit Transfer and Accumulation System, Indication of Credit Points

Please note: further information regarding courses can be found at:
http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/studium

Duration of block courses is given in “h =hours”, 1h =45 min

BLOCKS

RESPIRATION

Summary:
Diseases of the nose (including paranasal sinuses), nasopharynx, larynx, trachea, bronchi and lung and the pleura (thorax) will be discussed in a problem-oriented manner and with regard to different species including the respective treatments. During the clinical demonstration individual patients will be presented.

Further details (e.g. reading list) on the individual courses can be found online:
http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/studium

Courses in detail:

Institute of Pharmacology and Toxicology (Geyer et al.)

ANTI-INFECTIVES 1 - INTRODUCTION AND FUNDAMENTALS OF ANTI-INFECTIOUS THERAPY AND RESISTANCE L (1H)[204]

Students should be able to:

- know important definitions and terms related to anti-infectives
- know the names of the classes of antibiotics relevant to veterinary medicine
- can explain the basic principles for the selection/application of antibiotics
- can assess the problem of the development of resistance and know the basics of the development and spread of resistant bacteria

[204] 1.10, 1.18

- know national strategies for reducing the use of antibiotics and preventing the emergence and spread of resistance

ANTI-INFECTIVES 2 - B-LACTAM ANTIBIOTICS, POLYPEPTIDES L (1H) [205]

Students should be able to:

- name the structure, mechanism of action, type, spectrum, oral bioavailability, distribution/mobility, PK/PD parameters, therapeutic range and adverse drug reactions of the antibiotic classes of β-lactams (penicillins, cephalosporins, monobactams; carbapenems) and polypeptides
- reproduce the currently available preparations with indications and the current resistance situation

ANTI-INFECTIVES 3 - TETRACYCLINES, AMINOGLYCOSIDES L (1H) [206]

Students should be able to:

- name the structure, mechanism of action, type and spectrum of action, oral bioavailability, tissue distribution/mobility, PK/PD parameters, therapeutic range and adverse drug reactions of the antibiotic classes of tetracyclines and aminoglycosides
- describe the currently available preparations with indications and the current resistance situation

ANTI-INFECTIVES 4 - SULFONAMIDES, TRIMETHOPRIM, ANSAMYCINS L (1H) [207]

Students should be able to:

- name the structure, mechanism of action, type, spectrum, oral bioavailability, distribution/mobility, PK/PD parameters, therapeutic range and adverse drug reactions of the antibiotic classes of the thrimethoprimes and the ansamycins
- describe the currently available preparations with indications and the current resistance situation

ANTI-INFECTIVES 5 - FLUOROQUINOLONES, NITROFURANS, NITROIMIDAZOLES L (1H) [208]

Students should be able to:

[205] 1.10, 1.18, 1.25, 1.27

[206] 1.10, 1.18, 1.25, 1.27

[207] 1.10, 1.18, 1.25, 1.27

[208] 1.10, 1.18, 1.25, 1.27

- name the structure, mechanism of action, type and spectrum of action, oral bioavailability, tissue distribution/mobility, PK/PD parameters, therapeutic range and adverse drug reactions of the antibiotic classes of fluoroquinolones, nitrofurans and nitroimidazoles
- describe the currently available preparations with indications and the current resistance situation

PHARMACOLOGY OF RESPIRATION L (1H) [209]

Students should be able to:

- explain several causes and symptoms of respiratory problems
- explain respiratory processes
- demonstrate knowledge of the patho-physiology and therapy of the bronchial muscles,
- assess the numerous possibilities of therapeutic intervention, including potential unwanted side effects outside the respiratory tract
- assess inflammatory and non-inflammatory pathological processes of the respiratory tract when selecting therapeutics
- explain the special measures that have to be taken in the case of asthma and "chronic obstructive pulmonary disease" (COPD)

Institute of Veterinary Pathology (Herden, et al.)

PATHOLOGY RESPIRATION L (4H) [210]

Students should be able to:

- identify the pathological processes and developments in domestic animals
- explain the entities relating to the individual organ systems
- define and classify the diseases and explain them comprehensively in connection with the clinical appearance
- explain the aetiology and pathogenesis of these developments, as well as confirm the correct morphological diagnoses and discuss differential diagnoses

[209] 1.18

[210] 1.21, 1.24, 1.33

Clinic for Small Animals (Internal Medicine and Surgery) (Moritz, Schneider, Kramer, Peppler, Thiel, Bauer et al.)

EXAMINATION RESPIRATORY TRACT - SMALL ANIMALS L (1H) [211]

Students should be able to:

- discuss the anatomy and physiology of the respiratory tract (including protective mechanisms)
- recognize patients with respiratory diseases by way of their typical symptoms
- plan examination procedures for affected animals
- summarize the main causes for cough, stridor and dyspnoea

DIAGNOSTIC IMAGING RESPIRATION L (3H) [212]

Students should be able to:

- define normal findings in radiographic images of the thorax
- describe the most important thoracic radiographic patterns
- classify the different imaging methods of the thorax with regard to indications
- identify the radiographic signs of major thoracic disorders

NASAL DISCHARGE - SMALL ANIMALS L (1H) [213]

Students should be able to:

- list the different qualities of nasal discharge and define key evaluation criteria of the symptoms and their anamnestic relevance
- list symptoms associated with nasal discharge and interpret them causally
- describe several diseases associated with the symptom of nasal discharge and discuss with regard to possible differential diagnoses (systemic and local causes)
- list suitable methods for further diagnostics and evaluate them
- provide a plan for the problem-oriented approach of the treatment of nasal discharge and demonstrate its application with the help of case studies
- provide suggestions for the therapeutic treatment of diseases associated with nasal discharge

[211] 1.17

[212] 1.23

[213] 1.18, 1.21

SURGERY UPPER RESPIRATORY TRACT - SMALL ANIMALS L (2H) [214]

Students should be able to:

- discuss and define the brachycephalic syndrome
- describe surgically important anatomical structures
- define larynx paralyses

DYSPNOEA - SMALL ANIMALS L (1H) [215]

Students should be able to:

- provide a definition of the term "dyspnoea" and differentiate the term from other respiratory abnormalities
- list the different forms of dyspnoea, describe and discuss them with regard to their causes
- explain the patho-mechanism and the consequences of an existing breathing difficulty
- enumerate different diseases located in or outside the respiratory tract that may lead to an apparent dyspnoea

STRIDOR - SMALL ANIMALS L (1H) [216]

Students should be able to:

- list the different types of stridor and describe the tonality of pathological respiratory sounds in relation to the localisation
- provide several differential diagnoses for the occurrence of stridor and deduce therapeutic measures for the individual diseases

COUGH - SMALL ANIMALS L (1H) [217]

Students should be able to:

- on the basis of the history and the results of a clinical examination group the symptom “cough” to the respiratory tract or a cardiovascular disease
- develop a plan for further examination
- interpret the results of further examinations in a case-related manner and eventually provide a diagnosis

[214] 1.18

[215] 1.18

[216] 1.18

[217] 1.18, 1.21

ENDOSCOPY AND BAL - SMALL ANIMALS L (1H) [218]

Students should be able to:

- give the indications for an endoscopic examination of the respiratory tract
- describe the procedure of a rhinoscopy and a laryngo-tracheo-bronchoscopy
- describe the procedure of a bronchoalveolar lavage (BAL)
- describe and interpret the results of the endoscopic examination
- describe and interpret the results of the BAL

SURGERY PLEURA/THORAX - SMALL ANIMAL L (1H) [219]

Students should be able to:

- explain the anatomical basics of the lower respiratory tract
- name the various surgically relevant diseases of the lung and derive their therapy
- explain the various closure options
- work up complex cases of thoracic surgery
- draw up a diagnostic and a therapy plan

SURGERY LOWER RESPIRATORY TRACT - SMALL ANIMAL L (1H)[220]

Students should be able to:

- list the various surgically relevant diseases in the area of the pleura and the lung
- name the important diagnostic and therapeutic steps

Clinic for Horses (Internal Medicine and Surgery) (Fey, Roscher, Röcken et al.)

EXAMINATION RESPIRATORY TRACT - HORSES L (1H) [221]

Students should be able to:

- assess the sensitivity of the findings of their clinical examinations
- name suitable further examination methods with regard to their clinical findings
- provide and interpret arterial blood gas parameters

[218] 1.21, 1.23

[219] 1.18

[220] 1.18, 1.23

[221] 1.17, 1.21, 1.23

Upper Respiratory Tract - Horses L (2h) [222]

Students should be able to:

- name the most important diseases of the upper respiratory tract of the horse
- describe the symptoms typically associated with each of them
- assess the respective relevance for the individual or the livestock

Surgery Upper Respiratory Tract: Pharynx - Horses L (1h) [223]

Students should be able to:

- explain the systematic diagnostic procedure for diseases of the pharynx in horses
- name the most important diseases of the pharynx in horses
- describe the therapeutic measures based on these findings

Surgery Upper Respiratory Tract: Larynx - Horses L (1h) [224]

Students should be able to:

- explain the systematic diagnostic procedure for diseases of the larynx in horses
- name the most important diseases of the larynx in horses
- describe the therapeutic measures based on these findings

Surgery Upper Respiratory Tract/Paranasal Sinuses - Horses L (1h) [225]

Students should be able to:

- explain the systematic diagnostic procedure for diseases of the paranasal sinuses in horses
- describe essential clinical and imaging findings in diseases of the paranasal sinuses in horses
- name the most important diseases of the paranasal sinuses in horses and describe the therapeutic measures based on these findings

Deep Respiratory Tract - Horses L (3h) [226]

Students should be able to:

[222] 1.18, 1.21

[223] 1.18, 1.23

[224] 1.18, 1.23

[225] 1.18, 1.23

[226] 1.18, 1.21, 1.23

- list the national and international terminology for equine chronic bronchitis and explain the respective terms
- name the most important differential diagnoses of COB
- list the diagnostic criteria that lead to the exclusion of COB
- explain the pathomechanisms of COB
- describe the therapeutic measures based on these criteria

INHALATIVE THERAPY - HORSES L (1H) [227]

Students should be able to:

- list measures for the management of COB patients
- name active substances or groups of active substances that can be used to influence the most important pathomechanisms in COB
- justify the "step-by-step therapy" of COB
- name the most important possibilities of aerosol production
- explain the legal problems associated with the administration of inhaled medicinal products

Clinic for Ruminants (Internal Medicine and Surgery) (Sickinger et al.)

RESPIRATORY PROBLEMS - RUMINANTS: GENERAL L (4H) [228]

Students should be able to:

- recognise the respiratory diseases listed below on the basis of their clinical symptoms and make recommendations for therapy and prophylaxis.
- explain which further investigations are appropriate for the aetiological clarification of these diseases: BRSV infection, pulmonary emphysema incl. pasture emphysema, verminous bronchopneumonia, Maedi, pulmonary adenomatosis.

RESPIRATORY PROBLEMS - RUMINANTS: INFECTIOUS BOVINE RHINOTRACHEITIS L (1H) [229]

Students should be able to:

- list the most important aspects of the development of bovine enzootic bronchopneumonia (EBP) and name viral, bacterial and mycotic pathogens

[227] 1.18

[228] 1.1, 1.18, 1.21, 1.24

[229] 1.1, 1.18, 1.21, 1.24

- name the anatomical features of the bovine lung and explain the pathophysiological correlations of EBP
- name the diagnostic measures
- describe and explain therapeutic options and prophylactic measures

RESPIRATORY PROBLEMS - RUMINANTS: SMALL RUMINANTS L (1H) [230]

Students should be able to:

- name the most important respiratory diseases in small ruminants (Schafrotz, Maedi, pulmonary adenomatosis, lung worms, nasal invertebrates)
- make suggestions for useful diagnostics on the individual animal as well as in the livestock
- make suggestions for therapy and prophylactic measures, including suitable vaccination strategies

Clinic for Pigs (Internal Medicine and Surgery) (Reiner et al.)

PRRS - SWINE L (1H) [231]

Students should be able to:

- give a structured overview of the forms of respiratory diseases in pigs
- explain the etiology and pathogenesis of "porcine reproductive and respiratory syndrome (PRRS)" and point out the special characteristics of the disease
- name the clinical as well as the pathological-anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for PRRS, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of PRRS

INFLUENZA A L (1H) [232]

Students should be able to:

- explain the etiology and pathogenesis of swine influenza and point out the special characteristics of the disease

[230] 1.1, 1.18, 1.21, 1.24

[231] 1.1, 1.18, 1.21

[232] 1.1, 1.18, 1.21

- name the clinical as well as the pathological-anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for these diseases, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the diseases

ATROPHIC RHINITIS L (1H) [233]

Students should be able to:

- explain the etiology and pathogenesis of atrophic rhinitis and pneumonia caused by pasteurellae and bordetellae and point out the special characteristics of the disease
- name the clinical as well as the pathological-anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for Atrophic rhinitis pneumonia caused by pasteurellae and bordetellae, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the diseases

MYCOPLASMA L (1H) [234]

Students should be able to:

- explain the etiology and pathogenesis of infections of mycoplasma hyopneumonia and point out the special characteristics of the disease
- name the clinical as well as the pathological-anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for infections of mycoplasma hyopneumonia, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods

[233] 1.1, 1.18, 1.21

[234] 1.1, 1.18, 1.21

- rate the economic relevance of the disease

APP L (1H) [235]

Students should be able to:

- explain the etiology and pathogenesis of actinobacillus pleuropneumonia and point out the special characteristics of the disease
- name the clinical as well as the pathological-anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for actinobacillus pleuropneumonia, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the disease

RESPIRATION - SWINE: MISCELLANEOUS L (1H) [236]

Students should be able to:

- explain the etiology and pathogenesis of respiratory disorders in pigs (e.g. lung worms) and point out the special characteristics of the disease
- name the clinical as well as the pathological-anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for respiratory disorders in pigs (e.g. lung worms), assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the diseases

RESPIRATION THERAPY - SWINE L (1H) [237]

Students should be able to:

- discuss the characteristics of the therapy and prophylaxis of respiratory diseases in pigs and provide examples

[235] 1.1, 1.18, 1.21

[236] 1.1, 1.18, 1.21

[237] 1.1, 1.18

Miscellaneous

CLINICAL DEMONSTRATIONS S (8H) [238]

The content of the clinical demonstrations will refer to the patients currently treated in the clinics and thus are unknown in advance.

APPLIED PHYSIOLOGY RESPIRATORY TRACT (CROSS SECTIONAL SUBJECT) (1H)

Students should be able to:

- comprehend the functional anatomy of the air-conducting and gas-exchanging regions of the lungs
- define the biophysics of gas transport and diffusion processes in the alveoli.
- understand the importance of perfusion, ventilation, distribution and convection for gas exchange
- differentiate the causes and diagnostics of obstructive and restrictive pulmonary dysfunctions
- define the importance of medullary structures and the *glomera aortica and carotica* for the regulation of respiration

MYCOLOGY RESPIRATION (CROSS SECTIONAL SUBJECT) (1H) [239]

Students should be able to:

- provide epidemiological knowledge on the aspergillum infection in dogs and describe the possible symptoms of a systemic or local aspergillum infection
- develop a therapeutic plan for mycotic rhinitis and list diagnostic measures
- describe and discuss therapeutic measures in the case of a mycotic rhinitis
- list different eligible species of aspergillum and consider other mycoses differential-diagnostically
- name important sources of an aspergillum infection

IMAGING DIAGNOSTICS RESPIRATORY TRACT - HORSES AND SMALL ANIMAL (CROSS SECTIONAL SUBJECT) L (3H) [240]

Students should be able to:

[238] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

[239] 1.18, 1.21

[240] 1.23

- present the anatomical features of the upper and lower respiratory tract and distinguish pathological from physiological conditions on the basis of radiological or endoscopic image examples
- assess radiographs of the thorax and evaluate them for differential diagnosis
- assess endoscopic images and evaluate them for differential diagnosis
- describe the procedure of an endoscopic examination of the upper respiratory tract
- recognise the signs of common cardiovascular diseases on X-ray
- explain cardiovascular changes on radiographs using case studies

RESPIRATORY TRACT - VIROLOGY (CROSS SECTIONAL SUBJECT) (1H) [241]

Students should be able to:

- describe the structure and the pathogenic mechanisms resulting from influenza A and list various viral subtypes
- describe direct and indirect detection methods for influenza A virus and provide knowledge on the therapy and prophylaxis of possible infections
- present in detail the epidemiology of an infection of feline calicivirus as well as methods of virus diagnostics
- describe methods of passive and active immunization for feline calicivirus and comparatively evaluate their effectiveness
- discuss the epidemiology, clinical manifestations, diagnostics and therapy of the most common viral diseases of the equine respiratory tract (influenza, EVA, para-influenza, herpes)
- list preventative measures for viral respiratory diseases

BACTERIOLOGY RESPIRATORY TRACT - SMALL ANIMALS / HORSES (CROSS SECTIONAL SUBJECT) (2H) [242]

Students should be able to:

- list frequent infectious diseases of the respiratory tract of dogs, cats and horses, including their viral and bacteriological causes and their pathogenicity
- provide knowledge on the epidemiology of canine infectious tracheo-bronchitis
- and describe the clinical symptoms of the disease
- describe the patho-mechanisms of the bacterium *Bordetella bronchiseptica* that causes the kennel cough complex and the resulting clinic
- discuss the leading symptoms of the cat flu complex with regard to the pathogens involved
- depict the symptoms of the so-called "new disease" (Hemorrhagic-like Fever) with regard to the infection with a highly virulent strain of feline calicivirus

[241] 1.18, 1.21, 1.24

[242] 1.18, 1.21, 1.24

- list therapeutic and prophylactic measures with regard to infectious respiratory diseases
- describe procedures for the diagnosis and list therapeutic measures in the case of a positive test result
- describe the indications of a therapy with anti-infectives
- discuss the epidemiology, clinical manifestations, diagnostics and treatment of strangles
- describe the relevance of streptococci with regard to equine strangles

PARASITES RESPIRATORY TRACT - SMALL ANIMALS (CROSS SECTIONAL SUBJECT) (2H) [243]

Students should be able to:

- list the characteristic symptoms of a parasitic infestation of the respiratory tract
- describe procedures for the diagnosis of a possible parasitic infestation and list therapeutic measures in the case of a positive test result
- describe the most common parasites of the respiratory tract and their preferred localisation in dogs and cats and describe possible ways of infection

PARASITOLOGY RESPIRATION - CATTLE (CROSS SECTIONAL SUBJECT) (1H) [244]

Students should be able to:

- develop diagnostic strategies on the basis of livestock data, which enable the assessment of livestock problems with a parasitological background (lungworm infestation, nasal woodlouse)
- identify the significance of lungworm infestation in a herd that is not yet endemic and suggest appropriate therapeutic measures
- name prophylactic measure

[243] 1.18, 1.21, 1.24

[244] 1.18, 1.21, 1.24

Summary:
Diseases of the cardiovascular system will be dealt with systematically. Based upon patho-physiological developments, the symptoms, diagnostics and treatment of acquired and congenital disorders will be discussed with regard to the different species. The respective clinical demonstrations will provide further insight into cases of cardiovascular diseases.

Further details (e.g. reading list) concerning the individual courses can be found online:
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/studium

Courses in detail:

Institute of Pharmacology and Toxicology (Geyer et al.)

HYPOTENSION AND SHOCK L (1H) [245]

Students should be able to:

- explain the development of hypotension and the corresponding compensatory mechanisms
- define the different forms of shock
- point out different therapeutic approaches on the basis of the site of action of the medication applied
- treat hypotension as well as different types of shock
- justify and differentiate the application of the drugs selected on the basis of physiological and patho-physiological circumstances

HYPERTENSION L (1H) [246]

Students should be able to:

- explain the development of hypertension and the corresponding compensatory mechanisms
- point out different therapeutic approaches on the basis of the site of action of the medication applied
- treat hypertension as well as a hypertensive crisis
- justify and differentiate the application of the medication selected on the basis of physiological and patho-physiological circumstances

[245] 1.18, 1.19
[246] 1.18, 1.27

- explain and differentiate between unwanted effects of medication during the therapy with the substances selected

CARDIAC INSUFFICIENCY L (1H) [247]

Students should be able to:

- explain the development of heart failure and the corresponding compensatory mechanisms
- point out different therapeutic approaches on the basis of the site of action of the medication applied
- treat cardiac insufficiency
- justify and differentiate the application of the medication selected on the basis of physiological and patho-physiological circumstances
- explain and differentiate between unwanted effects of medication during the therapy with the substances selected

ANTI-ARRHYTHMIA L (1H) [248]

Students should be able to:

- differentiate between ionic currents and working myocardium in pacemaker cells,
- explain the causes and classification of cardiac arrhythmia
- name anti-arrhythmic drugs of the classes I-IV that are used in therapy and explain different therapeutic approaches on the basis of the site of action of the medication applied
- treat cardiac arrhythmia
- justify and differentiate the application of the medication selected on the basis of physiological and patho-physiological circumstances
- explain and differentiate between unwanted effects of medication during the therapy with the substances selected and outline countermeasures

Institute of Veterinary Pathology (Herden, et al.)

CARDIOVASCULAR PATHOLOGY L (3H) [249]

Students should be able to:

- identify the pathological processes and developments in domestic animals

[247] 1.18, 1.19, 1.27

[248] 1.18, 1.19, 1.27

[249] 1.21, 1.24, 1.33

- explain the entities relating to the individual organ systems
- define and classify the diseases and explain them comprehensively in connection with the clinical appearance
- explain the aetiology and pathogenesis of these developments, as well as confirm the correct morphological diagnoses and discuss differential diagnoses

Clinic for Small Animals (Internal Medicine and Surgery) (Moritz, Schneider, Kramer, Peppler, Thiel Bauer et al.)

CARDIAC AUSCULTATION L (1H) [250]

Students should be able to:

- conduct an auscultation
- assess a cardiac auscultation and in particular heart murmurs
- list differential diagnoses for different heart murmurs

THORACIC RADIOGRAPHY L (2H) [251]

Students should be able to:

- explain the procedure and technique of a radiograph of the thorax
- assign individual radiographic images to certain diseases

ECG L (2H) [252]

Students should be able to:

- explain the way an electrocardiogram is produced
- explain the evaluation process of an ECG
- assess important ECG findings

ECHOCARDIOGRAPHY L (2H) [253]

Students should be able to:

- list the various methods of echocardiography
- explain the depictions in the B-and M-mode
- explain the depictions of the colour and spectral doppler

[250] 1.17
[251] 1.23
[252] 1.21
[253] 1.23

- explain the collection of measurement parameters
- classify the developments in the echocardiographical measurement parameters correctly

MYOCARD - SMALL ANIMALS L (2H) [254]

Students should be able to:

- explain the causes of a systolic function disorder
- list the historical and clinical symptoms of a degenerative mitral valve insufficiency
- list the findings of secondary medical examination (radiography, ECG, echocardiography) in case of a degenerative mitral valve insufficiency
- discuss the treatment of various clinical stages of dilated cardiomyopathy
- explain the causes of a diastolic function disorder
- list the historical and clinical symptoms of various forms of cardiomyopathy in cats
- list the findings of secondary medical examinations (radiography, ECG, echocardiography) of cats
- discuss the treatment of different forms of cardiomyopathy in cats

BLOOD PRESSURE L (1H) [255]

Students should be able to:

- define and explain the terms systolic, diastolic and mean blood pressure
- list different methods of blood pressure measurement and assess their advantages and disadvantages
- discuss the impact of the choice of the blood-pressure cuff on non-invasive measurements
- assess the results of blood pressure measurement
- list the indications for blood pressure measurement
- describe the basic therapeutic strategies to influence blood pressure

VASCULAR - SMALL ANIMALS: CONGENITAL HEART DISEASES L (1H) [256]

Students should be able to:

- classify congenital and vascular heart diseases
- list the main medical findings (history, clinical, ECG, radiography, echocardiography) of common congenital heart diseases

[254] 1.18, 1.21, 1.23

[255] 1.18, 1.21

[256] 1.18, 1.21, 1.23

- discuss the medical, surgical and interventional therapy of the most common congenital heart diseases

ENDOCARD - SMALL ANIMALS L (1H) [257]

Students should be able to:

- list the causes of a mitral regurgitation
- list the historical and clinical symptoms of a degenerative mitral regurgitation
- list the findings of secondary medical examinations (radiography, ECG, echocardiography) in degenerative mitral regurgitation
- discuss the different clinical degrees of mitral regurgitation

PERICARD - SMALL ANIMALS L (1H) [258]

Students should be able to:

- list several pericardial diseases
- list the historical and clinical symptoms of a pericardial effusion
- list the findings of secondary medical examinations (radiography, ECG, echocardiography) in pericardial effusions
- discuss the treatment of a pericardial effusion

CARDIOVASCULAR SURGERY L (2H) [259]

Students should be able to:

- explain indications and basic features of surgical procedures on the heart in small animals
- explain the indications and procedure for pericardiectomy
- derive the basic principles of a pacemaker

Clinic for Horses (Internal Medicine and Surgery) (Fey, Roscher, Röcken et al.)

CARDIAC ARRHYTHMIA IN THE HORSE L (1H) [260]

Students should be able to:

- give the indication for an ECG in the horse

[257] 1.18, 1.21, 1.23

[258] 1.18, 1.21, 1.23

[259] 1.18

[260] 1.18, 1.21

- describe the clinical findings of the most important physiological cardiac arrhythmias of the horse and recognise them in the ECG
- recognise the two most important pathological cardiac arrhythmias in horses (atrial fibrillation and ventricular extrasystole) on ECG
- name criteria for assessing the clinical relevance of atrial fibrillation.
- explain therapeutic options in atrial fibrillation
- name therapeutic options for ventricular extrasystole

MORPHOLOGICALLY TANGIBLE HEART DEFECTS - HORSES L (1H) [261]

Students should be able to:

- indicate when an equine echocardiography is necessary
- describe the most important changes in equine valvular diseases and give their functional effects
- describe the most important innate equine heart disorders
- name therapeutic options that can be taken in the case of heart insufficiency

OTHER CARDIOVASCULAR DISEASES OF THE HORSE L (1H) [262]

Students should be able to:

- name the causes and effects of myocarditis and pericarditis in the horse
- name changes in the equine arteries
- differentiate between thrombophlebitis and periphlebitis of the jugular veins in the horse.
- describe the therapy of thrombophlebitis
- name the causes and effects of thrombo-embolism in the horse

Clinic for Ruminants (Internal Medicine and Surgery) (Sickinger et al.)

ENDOCARD, MYOCARD - RUMINANTS L (1H) [263]

Students should be able to:

- describe the symptoms of the heart diseases in question
- point out measures for differential diagnosis
- classify these diseases prognostically and suggest possible treatments

[261] 1.18, 1.23

[262] 1.18

[263] 1.1, 1.18, 1.21

VASCULAR - CATTLE L (1H) [264]

Students should be able to:

- describe the following measures: Technique of blood collection in cattle and venous access for injections and infusions
- describe the performance of a blood transfusion in cattle
- name the diseases which have a significant effect on the vascular system

PERICARD - RUMINANTS L (1H) [265]

Students should be able to:

- list the most common causes of diseases of the pericardium in cattle
- describe the symptoms and the diagnostic, differential diagnostic and therapeutic possibilities
- assess these prognostically

Clinic for Pigs (Internal Medicine and Surgery) (Reiner et al.)

CARDIOVASCULAR - PIG L (1H) [266]

Students should be able to:

- explain the aetiology and pathogenesis of cardiovascular diseases, highlighting disease-specific features
- name the clinical as well as the pathological-anatomical and histological symptoms and apply these with regard to the course of the disease and prognosis
- list possible and important differential diagnoses, evaluate their probability and name diagnostic approaches for their differentiation
- initiate a disease- and case-related diagnosis and discuss possible results
- identify suitable therapeutic measures as well as metaphylactic and prophylactic measures and weigh their suitability against each other
- evaluate the economic relevance of the diseases

[264] 1.1, 1.18, 1.21

[265] 1.1, 1.18, 1.21

[266] 1.1, 1.18, 1.21

Miscellaneous

CLINICAL DEMONSTRATIONS S (6H) [267]

The content of the clinical demonstrations will refer to the patients currently treated in the clinics and thus are unknown in advance.

PATHO-PHYSIOLOGY HEART (CROSS SECTIONAL SUBJECT) (2H)

Students should be able to:

- explain the basic mechanisms of cardiovascular regulation
- explain the relationship between preload, afterload, contraction and blood pressure
- classify the different types of cardiac insufficiency
- list the symptoms of cardiac insufficiency
- discuss the different categories of heart insufficiency

ECG, X-RAY, AUSCULTATION: CARDIOVASCULAR SYSTEM (CROSS SECTIONAL SUBJECT) (3H) [268]

Students should be able to:

- match the heart sounds to the mechanical heart actions
- match the heart sounds to the electrocardiographic heart actions
- name the causes of heart murmurs
- explain the significance of the puncta maxima of heart murmurs
- evaluate an X-ray of the heart
- evaluate an ECG

BACTERIAL HEART DISEASES (CROSS SECTIONAL SUBJECT) (1H) [269]

Students should be able to:

- list the most important bacterial cardiovascular diseases
- list the clinic and symptoms of endocarditis
- explain the therapy of endocarditis

[267] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

[268] 1.21, 1.23

[269] 1.18, 1.24

Parasitology Cardiac/Vascular (Cross Sectional Subject) (1h) [270]

Students should be able to:

- list the main causes of pulmonary hypertension
- explain the clinical and further findings in pulmonary hypertension
- explain the parasitic diseases of the pulmonary arteries
- explain the basic mechanisms of cardiac mechanics (working diagram of the myocardium; heart sounds incl. vitia; valve plane mechanism)
- understand the (patho-)physiology of the autonomic innervation of the heart
- derive the relationship between preload, afterload, contraction and arterial blood pressure
- classify the different cardiac insufficiencies and list their symptoms
- understand and discuss the basics of concentric and eccentric dilated cardiomyopathies

Blood pressure demonstration (Cross Sectional Subject) (2h) [271]

Students should be able to:

- define and explain the terms systolic, diastolic and mean blood pressure
- list different methods of blood pressure measurement and assess their advantages and disadvantages
- discuss the impact of the choice of the blood-pressure cuff on non-invasive measurements
- assess the results of blood pressure measurement
- list indications for the taking of blood pressure
- describe the fundamental therapeutic strategies influencing blood pressure

ECG interpretation (Cross Sectional Subject) (2h) [272]

Students should be able to:

- explain the way an electrocardiogram is produced
- explain the evaluation process of an ECG examination
- assess important ECG findings
- recognize ventricular arrhythmias
- recognize supraventricular arrhythmias
- recognize atrioventricular (AV) blocks
- recognize bundle branch blocks

[270] 1.18, 1.24

[271] 1.18, 1.21

[272] 1.21

Summary:
Diseases of the mouth (including teeth), oesophagus, stomach (including proventriculus), intestinal tract and the gastrointestinal accessory glands (liver, pancreas) are discussed in a problem-oriented manner with regard to the different species. The respective clinical demonstrations will provide an insight into individual cases.

Courses in detail:

Institute of Pharmacology and Toxicology (Geyer et al.)

ANTIEMETICS L (1H) [273]

Students should be able to:

- recognize vomiting as a symptom indicating several causes,
- suggest therapeutic methods based upon the causes present
- assess whether there is a universal-antiemetic
- assess the suitability of the different substances, to some extent as single therapy (in the case of cinetoses) or in combination with multiple antiemetics

PHARMACOLOGY ULCER L (1H) [274]

Students should be able to:

- explain the structure of gastric mucosa
- explain the different stimulatory and inhibitory mechanisms of acid secretion (parietal cell; including the ECL-cells involved (histamine, gastrin) and the vegetative nervous system
- explain the patho-physiology of ulcerative gastropathy
- discuss the numerous methods of therapeutic intervention, also with regard to pharmacokinetics (effect duration) of the different active substances, including possible side effects that may occur
- apply different therapeutic approaches on the basis of the selective targets of ulcer therapeutics
- develop the biochemistry of acidification as an approach to a long-lasting blocking caused by prazoles and the further development by means of non-irreversible proton pump inhibitors of the prazane-type

[273] 1.18
[274] 1.18

LAXATIVES, STYPTICA L (1H) [275]

Students should be able to:

- explain diarrhoea and constipation as a disorder of the intestinal water balance (intestines as H2O-receptive organs), rather than an intestinal motility disorder
- define therapeutic aims of intervention for the treatment of diarrhoea and constipation
- explain the relevance of oral re-hydration in cases of enterotoxin-induced secretory diarrhoea

Institute of Veterinary Pathology (Herden, et al.)

PATHOLOGY – ORAL CAVITY AND PHARYNX, TONSILS, OESOPHAGUS, RUMEN, STOMACH, INTESTINE, LIVER, PANCREAS AND ABDOMEN (TOTAL 12H) [276]

Students should be able to:

- identify the pathological processes and conditions of domestic animals
- explain the entities that concern individual organ systems
- define and classify the diseases and explain them comprehensively in context to the clinical image
- explain the aetiology and pathogenesis of the alterations as well as make the correct morphological diagnosis and discuss differential diagnoses

Clinic for Small Animals (Internal Medicine and Surgery) (Moritz, Schneider, Kramer, Peppler, Thiel, Bauer et al.)

SURGERY ORAL CAVITY L (1H) [277]

Students should be able to:

- deduce and define the different surgical methods that can be used in the oral cavity
- discuss surgical limits and complications of surgery in the oral cavity
- list the different surgically relevant diseases

SURGICAL DISEASES STOMACH - SMALL ANIMAL L (2H) [278]

Students should be able to:

[275] 1.18

[276] 1.21, 1.24, 1.33

[277] 1.18

[278] 1.18, 1.21, 1.23

- recognise torsio ventriculi in dogs, initiate the first treatment steps and derive the operation at least theoretically
- define the different types of gastropexy
- evaluate the complications and prognosis

Problem-oriented Processing of a Case, Stomach Diseases L (1h) [279]

Students should be able to:

- take a medical history and draw up a problem list according to leading symptoms and importance, using the example of a patient with gastrointestinal symptoms
- list differential diagnoses
- develop a diagnostic plan based on a prioritised problem list
- develop a therapeutic plan

Small intestine I-III - Small Animal L (3h) [280]

Students should be able to:

- identify and name symptoms of small intestine disease and list diagnostic measures
- explain the function and interaction of the microbiome and the immune system as well as the consequences of dysfunction
- elaborate chronic enteropathies of the small intestine on the basis of knowledge of causes and differential diagnoses as well as develop a step-by-step plan for the diagnostic work-up and implementation of therapeutic measures of selected diseases of the small intestine

Imaging gastrointestinal tract L (2h) [281]

Students should be able to:

- perform and explain a contrast study
- recognize and discuss radiographic symptoms of characteristic GI diseases (e.g. ileus, gastric torsion, intussusceptions, etc.)
- interpret ultrasound images of the GI-tract

[279] 1.18, 1.21, 1.23

[280] 1.18, 1.21, 1.23

[281] 1.23

LARGE INTESTINE L (2H) [282]

Students should be able to:

- explain the basics of the functions of the colon, microbiome, immune system and the consequences of dysfunctions
- name typical colon symptoms as well as differential diagnoses
- elaborate on patients with chronic diseases of the large intestine
- name the causes and differential diagnoses of diseases in the anorectal region and develop a diagnostic and therapeutic plan

SURGERY INTESTINAL TRACT - SMALL ANIMALS L (2H)[283]

Students should be able to:

- define and apply the surgical terms that refer to the small intestine
- explain surgical diseases of the small bowel
- theoretically explain small bowel surgery
- explain the anatomical differences between the small and large intestines
- explain the surgical measures of the large intestine and their special characteristics
- define the most important surgical measures that are used during surgery of the large intestine

GASTROINTESTINAL TRACT DISEASES - CAT L(1H) [284]

Students should be able to:

- make diagnoses of typical cat diseases of the GIT and name therapy and potential causes
- discuss differential diagnoses, diagnostic plan, therapeutic measures and prophylaxis with the owner

ENDOSCOPY GASTROINTESTINAL TRACT L (1H) [285]

Students should be able to:

- recognize the indications for an endoscopy
- describe the procedure of a normal endoscopy
- discuss the complications and contraindications of an endoscopy

[282] 1.18, 1.21, 1.23

[283] 1.18

[284] 1.18, 1.21

[285] 1.23

LIVER DISEASES - SMALL ANIMALS L (3H) [286]

Students should be able to:

- recognize the symptoms of a hepatopathy
- discuss the laboratory findings of liver disease
- enumerate aetiopathogenetic diagnoses of liver diseases in dogs and cats
- discuss the patho-physiology and clinic of hepatoenzephalopathy
- explain possible treatments of liver diseases

SURGERY ANUS - SMALL ANIMALS L (1H) [287]

Students should be able to:

- recognize and address the basic anatomical structures in the anal area
- list, classify and define diseases of the anal and peri-anal area

IMAGING LIVER / PANCREAS L (2H) [288]

Students should be able to:

- assign characteristic radiographic and ultrasonographic images to certain diseases of the liver and pancreas
- name and evaluate the different imaging techniques in order of importance

CYTOLOGY OF LIVER AND PANCREAS L (2H) [289]

Students should be able to:

- list indications and contraindications for taking a liver cytology specimen
- list and explain the collection techniques and the techniques for preparing cytological preparations from liver and pancreas
- list the cytological characteristics of hepatocytes
- list the types of inflammation based on the dominant cell population
- list degenerative changes of hepatocytes recognisable in the cytological preparation and explain their possible aetiology
- list primary and secondary liver tumours
- list cytologically recognisable pigmentary changes of the hepatocytes

[286] 1.18, 1.21

[287] 1.18

[288] 1.23

[289] 1.21

SURGERY LIVER AND PANCREAS - SMALL ANIMALS L (3H)[290]

Students should be able to:

- define diseases in the area of the liver, gall bladder, pancreas and explain their therapeutic possibilities
- explain the theoretical fundamentals of surgical interventions
- explain the use of staplers

PANCREAS - SMALL ANIMALS L (1H) [291]

Students should be able to:

- discuss the anatomy and physiology of the pancreas (including the protective mechanisms that prevent auto-digestion)
- discuss laboratory tests that can be used to diagnose a pancreatic disease
- explain therapeutic measures that can be taken in the case of pancreatitis and exocrine pancreatic insufficiency

SURGERY HERNIA - SMALL ANIMALS L (1H) [292]

Students should be able to:

- define the term hernia
- explain the aetiology, aetio-pathogenesis, clinics, diagnostics and treatment of various hernias
- define and explain the difference between hernia diaphragmatica and diaphragmatic rupture

Clinic for Horses (Internal Medicine and Surgery) (Fey, Roscher, Röcken et al.)

COLIC - HORSES I AND II L (2H) [293]

Students should be able to:

- define the term "colic" in horses
- name forensic aspects when taking over colic patients
- list the examinations required in colic patients
- evaluate medications commonly used in colic

[290] 1.18

[291] 1.18, 1.21

[292] 1.18

[293] 1.18, 1.21

- list the most common forms of colic
- list the most important further examinations
- evaluate blood parameters with regard to their prognostic significance
- explain how to perform a paracentesis
- evaluate laboratory diagnostic parameters in abdominal punctate

ORAL CAVITY AND TEETH HORSE L (1H) [294]

Students should be able to:

- describe the patho-physiological characteristics of horses' teeth
- identify and document the most common dental problems of the horse
- name the most important differential diagnoses of oral and pharyngeal dysphagia

TEETH AND JAW FRACTURES - HORSES L (1H) [295]

Students should be able to:

- explain the systematic diagnostic procedures for fractures of the skull in horses
- describe the main clinical and imaging findings in equine skull fractures
- name the most important therapeutic options and principles

OESOPHAGUS AND STOMACH - HORSES L (1H) [296]

Students should be able to:

- recognise the symptoms of pharyngeal obstruction and name treatment measures
- list complications of pharyngeal obstruction
- differentiate between primary and secondary gastric congestion
- recognise and treat parasites of the horse's stomach

EGUS L (1H) [297]

Students should be able to:

- name the symptoms of gastritis in horses
- explain the differences in diseases of the cutaneous versus the glandular mucosa of the horse's stomach
- name the therapeutic options for EGUS and its subgroups

[294] 1.18

[295] 1.18, 1.23

[296] 1.18

[297] 1.18

Small Intestine - Horses L (1h) [298]

Students should be able to:

- describe symptoms of diseases of the small intestine in horses
- name the parasites of the small intestine in horses
- name the causes of inflammations of the small intestine, especially in foals and young horses
- describe the functional tests of the small intestine
- explain the most important diseases leading to carbohydrate malabsorption in horses

Surgery Upper Digestive Tract - Horses L (1h) [299]

Students should be able to:

- explain the systematic diagnostic procedure for diseases of the upper digestive tract in horses
- name the most important diseases of the upper digestive tract in horses
- describe the therapeutic measures based on these findings

Abdominal Surgery - Horses: Small Intestine L (1h) [300]

Students should be able to:

- name the most important diseases of the small intestine in horses
- describe the surgical interventions based on them

Abdominal Surgery - Horses: Large Intestine L (1h) [301]

Students should be able to:

- name the most important diseases of the large intestine in horses
- describe the surgical interventions based on them

Abdominal Surgery - Horses: Laparoscopy L (1h) [302]

Students should be able to:

- name the most important indications for laparoscopy in horses

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[298] 1.18, 1.21

[299] 1.18

[300] 1.18

[301] 1.18

[302] 1.18, 1.23

- describe the procedure and principles of laparoscopic therapies

LARGE INTESTINE (COLON) - HORSES L (1H) [303]

Students should be able to:

- list the possibilities concerning the diagnostics of diseases of the equine colon
- define and explain the main physiological and patho-physiological mechanisms of the function of the colon
- describe the disease pattern of specific diseases of the equine colon
- name the fundamental principles of the therapy of diseases of the equine colon

EMACIATION AND DIARRHOEA - HORSES L (1H) [304]

Students should be able to:

- name suitable further methods of examination in the case of emaciation and diarrhoea
- explain the main causes of chronic emaciation of the horse
- provide examples of diseases that have these symptoms

INTENSIVE THERAPY GASTROINTESTINAL TRACT - HORSES L (1H) [305]

Students should be able to:

- list the diagnostic possibilities for assessing fluid, acid-base and electrolyte balance in the adult horse
- name the substances/infusion solutions that can be used for therapy and calculate the quantities to be administered depending on the deviation
- list suitable substances for anti-inflammatory and antithrombotic therapy in adult equine intensive care patients

LIVER - HORSES L (1H) [306]

Students should be able to:

- list the possibilities concerning the diagnostics of equine liver diseases
- define and explain the main physiological and patho-physiological mechanisms of the function of the equine liver
- describe the disease pattern of specific diseases of the equine liver
- name the fundamental therapeutic principles of equine liver diseases

[303] 1.18, 1.21

[304] 1.18, 1.21

[305] 1.18

[306] 1.18, 1.21

Other Diseases Gastrointestinal Tract - Horses L (1h) [307]

Students should be able to:

- take the opportunity to study in depth the disease patterns that have not yet been sufficiently addressed in the respective year
- look at recommended publications in order to work through them in self-study
- explain further diagnostic measures that are used to clarify emaciation in particular
- name diseases that are particularly the cause of emaciation

Clinic for Ruminants (Internal Medicine and Surgery) (Sickinger et al.)

Mouth and tongue - ruminants L (1h) [308]

Students should be able to:

- point out the causes previously discussed of changes in the areas of mouth and tongue
- diagnose these changes based upon their symptoms
- propose options of differential diagnostic clarification
- classify these diseases prognostically and, if necessary, propose a suitable treatment

Oesophagus - ruminants L (1h) [309]

Students should be able to:

- name the causes of throat diseases discussed, diagnose these changes and, if the disease can be treated, suggest suitable treatment methods

Rumen fluid L (1h)[310]

Students should be able to:

- understand the importance of the proventicular digestion for the feeding of ruminants
- explain its underlying influences
- explain how rumen fluid can be obtained for examination, which insights can be gained from its analysis and how such an examination can be held under practical conditions

[307] 1.8, 1.18, 1.21

[308] 1.1, 1.18, 1.21, 1.24

[309] 1.1, 1.18

[310] 1.1, 1.21

PROVENTRICULUS DISEASES L (2H) [311]

Students should be able to:

- explain the significance of the proventriculus system for the health and productivity of cattle
- name the factors that influence the state of the proventriculus system
- diagnose such disorders
- name suitable treatment methods that may prevent or therapeutically treat these disorders

ABOMASUM - CATTLE L (1H) [312]

Students should be able to:

- name the most important diseases of the abomasum and their diagnostics
- describe the currently possible surgical therapy procedures for abomasal displacement
- describe and explain conservative therapy options, concomitant therapies and prophylactic measures

DIARRHOEA CALVES / CATTLE L (1H) [313]

Students should be able to:

- explain the causes, symptoms and pathological effects of the types of diarrhoea discussed
- classify these diseases diagnostically and, if the disease can be treated, suggest suitable treatment methods
- name concepts of prophylaxis

INTESTINE- RUMINANTS L (1H) [314]

Students should be able to:

- explain the bovine intestinal diseases previousl
- describe the symptoms, the diagnostic approach and possible therapeutic measures

[311] 1.1, 1.18

[312] 1.1, 1.18

[313] 1.1, 1.18, 1.21, 1.24

[314] 1.1, 1.18, 1.21, 1.24

LIVER - RUMINANTS L (2H) [315]

Students should be able to:

- describe the occurrence, causes and symptoms (including diagnosis and differential diagnostics) of liver diseases
- classify the diseases prognostically
- name adequate methods of treatment and prophylaxis

Clinic for Pigs (Internal and Surgery) (Reiner et al.)

CLOSTRIDIA- SWINE L (1H) [316]

Students should be able to:

- explain the aetiology and pathogenesis of clostridia diarrhoea and point out the special characteristics of the disease
- name the clinical as well as the pathological, anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for clostridial diarrhoea, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the disease.

GASTROINTESTINAL TRACT - SWINE: COCCIDIA L (1H) [317]

Students should be able to:

- explain the etiology and pathogenesis of *Isospora suis* and point out the special characteristics of the disease
- name the clinical as well as the pathological, anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for *Isospora suis*, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods

[315] 1.1, 1.18, 1.21

[316] 1.1, 1.18, 1.21

[317] 1.1, 1.18, 1.21

- rate the economic relevance of the disease

GASTROINTESTINAL TRACT - SWINE: DYSENTERY L (1H) [318]

Students should be able to:

- explain the etiology and pathogenesis of dysentery in pigs and point out the special characteristics of the disease
- name the clinical as well as the pathological, anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for dysentery in pigs, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the disease

GASTROINTESTINAL TRACT - SWINE: *E.COLI*-DYSENTERY L (1H) [319]

Students should be able to:

- explain the aetiology and pathogenesis of coli-dysentery in lactating piglets, and point out the special characteristics of the disease
- name the clinical as well as the pathological, anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for coli-dysentery in lactating piglets, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the disease

GASTROINTESTINAL TRACT - SWINE: COLI ENTEROTOXAEMIA L (1H) [320]

Students should be able to:

- explain the aetiology and pathogenesis of coli enterotoxaemia and point out the special characteristics of the disease

[318] 1.1, 1.18, 1.21

[319] 1.1, 1.18, 1.21

[320] 1.1, 1.18, 1.21

- name the clinical as well as the pathological, anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for coli enterotoxaemia, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the disease

GASTROINTESTINAL TRACT - SWINE: ILEITIS L (1H) [321]

Students should be able to:

- explain the aetiology and pathogenesis of ileitis and point out the special characteristics of the disease
- name the clinical as well as the pathological, anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for ileitis and assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the disease

GASTROINTESTINAL TRACT - SWINE: NEMATODES L (1H) [322]

Students should be able to:

- explain the aetiology and pathogenesis of gastrointestinal nematodes in pigs and point out the special characteristics of the disease
- name the clinical as well as the pathological, anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for gastrointestinal nematodes in pigs and assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the disease

[321] 1.1, 1.18, 1.21

[322] 1.1, 1.18, 1.21, 1.24

FEED AND FEEDING - PIG L (1H) [323]

Students should be able to:

- explain the aetiology and pathogenesis of feed and feeding errors, highlighting the special features
- name the clinical as well as the pathological-anatomical and histological symptoms and apply these with regard to the course of the disease and prognosis
- list possible and important differential diagnoses, evaluate their probability and name diagnostic approaches to differentiate between them
- initiate a disease- and case-related diagnosis and discuss possible results
- identify suitable therapeutic measures as well as metaphylactic and prophylactic measures and weigh their suitability against each other
- evaluate the economic relevance of the diseases

ROTA AND CORONAVIRUSES - PIG L (1H) [324]

Students should be able to:

- explain the aetiology and pathogenesis of diseases caused by rota and corona viruses of pigs and highlight the disease-specific features
- name the clinical as well as the pathological anatomical and histological symptoms and apply these with regard to the course of the disease and prognosis
- list possible and important differential diagnoses of diseases caused by rotaviruses and corona viruses of pigs, evaluate their probability and name diagnostic approaches for their differentiation
- initiate a disease- and case-related diagnosis and discuss possible results
- identify suitable therapeutic measures as well as metaphylactic and prophylactic measures and weigh their suitability against each other
- evaluate the economic relevance of the diseases

SALMONELLOSIS L (1H) [325]

Students should be able to:

- explain the aetiology and pathogenesis of salmonellosis and point out the special characteristics of the disease
- name the clinical as well as the pathological, anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis

[323] 1.1, 1.18, 1.21, 1.35

[324] 1.1, 1.18, 1.21, 1.24

[325] 1.1, 1.18, 1.21, 1.24

- list possible and important differential diagnoses for salmonelloses, assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the disease

MYCOTOXINS - SWINE L (1H) [326]

Students should be able to:

- explain the aetiology and pathogenesis of mycotoxicoses, especially DON and zearalenone, and point out the special characteristics of the diseases
- name the clinical as well as the pathological, anatomical and histological symptoms and apply them with regard to the development of the disease and its prognosis
- list possible and important differential diagnoses for mycotoxicoses and assess them with regard to their probability and name diagnostic approaches for their differentiation
- initiate diagnostics for this specific disease and case and discuss possible results
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis and rate the suitability of methods
- rate the economic relevance of the diseases

DIARRHOEA ACCORDING TO AGE L (1H) [327]

Students should be able to:

- explain the aetiology and pathogenesis of suckling piglet diarrhoea, highlighting the disease-specific features
- name the clinical as well as the pathological-anatomical and histological symptoms and apply these with regard to the course of the disease and prognosis
- list possible and important differential diagnoses of suckling piglet diarrhoea, evaluate their probability and name diagnostic approaches to differentiate between them
- initiate a disease- and case-related diagnostic and discuss possible results
- identify suitable therapeutic measures as well as metaphylactic and prophylactic measures and weigh their suitability against each other
- evaluate the economic relevance of the diseases

[326] 1.1, 1.18, 1.21

[327] 1.1, 1.18, 1.21

Gastric Ulcer EHS - Pig L (1h) [328]

Students should be able to:

- explain the aetiology and pathogenesis of gastric ulcers and enterohaemorrhagic syndrome in pigs, highlighting the disease-specific features
- name clinical as well as pathological-anatomical and histological symptoms and apply these with regard to the course of the disease and prognosis
- list possible and important differential diagnoses to gastric ulcer and enterohaemorrhagic syndrome in pigs, evaluate their probability and name diagnostic approaches to differentiate them
- initiate a disease- and case-related diagnosis and to discuss possible results
- identify suitable therapeutic measures as well as metaphylactic and prophylactic measures and weigh their suitability against each other
- evaluate the economic relevance of the diseases

Miscellaneous

Clinical demonstrations S (16h) [329]

The content of the clinical demonstrations will refer to the patients currently treated in the clinics and thus are unknown in advance.

Physiology of swallowing and mastication (Cross Sectional Subject) (1h)

Students should be able to:

- discuss the mechanisms of mastication and the production of saliva in different species
- describe the physiology of swallowing from mouth to stomach
- understand the physiology and control of saliva production and its importance for oral predigestion and immune defence

Teeth - Fundamentals and Anatomy (Cross Sectional Subject) (2h)

Students should be able to:

- name the dental formulas for dogs and cats
- name the structure of the periodontium

[328] 1.1, 1.18, 1.21

[329] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

TEETH- SMALL ANIMALS: (CROSS SECTIONAL SUBJECT) (1H) [330]

Students should be able to:

- recognise and classify the most important stomatological diseases of dogs and cats and name possible therapies
- theoretically take intraoral radiographs and perform tooth extractions of single and multi-rooted teeth

TEETH - HORSES: (CROSS SECTIONAL SUBJECT) (1H) [331]

Students should be able to:

- explain the systematic diagnostic procedure for diseases of the teeth
- identify the most important clinical findings in equine dental diseases
- name the most important diseases of the teeth in horses
- describe the therapeutic measures based on these findings

PHYSIOLOGY STOMACH (CROSS SECTIONAL SUBJECT) (1H)

Students should be able to:

- describe the physiology of the normal vomiting reflex
- discuss the production of stomach acid and other digestive products of the stomach
- explain the normal motor function of the stomach

PHYSIOLOGY SMALL INTESTINE (CROSS SECTIONAL SUBJECT) (1H)

Students should be able to:

- describe the normal physiology of digestion within the small intestine
- discuss issues that influence the digestion

PARASITES GASTROINTESTINAL TRACT - SMALL ANIMALS (CROSS SECTIONAL SUBJECT) (2H) [332]

Students should be able to:

- discuss clinically relevant aspects of the treatment of and prophylaxis against gastrointestinal parasites
- discuss common parasites of the gastrointestinal tract of dogs and cats including their life cycles and transmission paths

[330] 1.18, 1.23

[331] 1.18, 1.23

[332] 1.18, 1.21

VIROLOGY GASTROINTESTINAL TRACT - SMALL ANIMALS (CROSS SECTIONAL SUBJECT) (1H) [333]

Students should be able to:

- name the individual diseases caused by viruses in the gastrointestinal tract in small animals and differentiate between them according to different criteria
- explain measures that can clarify the diagnosis

BACTERIOLOGY GASTROINTESTINAL TRACT (CROSS SECTIONAL SUBJECT) (1H) [334]

Students should be able to:

- explain the aetiology and pathogenesis of diarrhoea and point out the special features of the pathogens
- classify the different pathogens of diarrhoea and assess their clinical relevance
- explain common gastrointestinal bacteria and their spreading
- demonstrate suitable therapeutic measures and measures of meta- and prophylaxis
- assess the zoonotic potential of the pathogens and the risk of infection for humans

PHYSIOLOGY LARGE INTESTINE/COLON (CROSS SECTIONAL SUBJECT) (1H)

Students should be able to:

- discuss the mechanisms of water re-absorption from the colon
- explain the ordinary defecation
- describe the ordinary digestive processes and immunological processes of the large intestine

PARASITES GASTROINTESTINAL TRACT - HORSES (CROSS SECTIONAL SUBJECT) (1H) [335]

Students should be able to:

- specify the typical clinical symptoms of the most important equine endoparasites
- list suitable measures to reduce the rate of parasitic infections of a stock
- explain which specific features of the small strongylids make it the moment the most important parasite

[333] 1.18, 1.21

[334] 1.18, 1.21, 1.24

[335] 1.18, 1.21

Parasitology Gastrointestinal Tract - Cattle (Cross Sectional Subject) (1h)[336]

Students should be able to:

- correctly diagnose a livestock with rumen fluke and liver fluke infestation on the basis of given livestock data
- recommend therapy and prophylactic measures

Antibiotics in Horses (Cross Sectional Subject) (1h)[337]

Students should be able to:

- name antibiotics (groups) that are intolerable for horses
- list reasons for a rational use of antibiotics
- name clinical pictures in horses that allow the use of antibiotics even without evidence of germs

Physiology Liver (Cross Sectional Subject) (1h)

Students should be able to:

- understand the complex histology and blood supply of the liver
- recognise the importance of the liver for glucose metabolism as well as the production of plasma proteins with significance for acute phase reaction, blood coagulation as well as hormone and electrolyte transport
- understand the importance of the liver for fat digestion (through bile acids) and the transport of lipids in the bloodstream
- assess and understand the endobiotic and xenobiotic metabolic capacity of the liver

Physiology Pancreas (Cross Sectional Subject) (1h)

Students should be able to:

- understand the importance of the exocrine pancreas for the intestinal digestion of proteins, fats, carbohydrates and nucleic acids
- understand the classification of pancreatic diseases into acute and chronic pancreatitis, adenocarcinoma and pancreatic insufficiency
- know diagnostic tests for the detection of these pancreatic diseases

[336] 1.18, 1.21, 1.24

[337] 1.10, 1.18

DIETETICS SMALL ANIMAL (CROSS SECTIONAL SUBJECT) (1H) [338]

Students should be able to:

- develop awareness of the requirements and dietary differences between dogs and cats as carnivorous and obligatory carnivorous patients
- calculate calorie requirements in disease and health
- discuss with the owner the importance, advantages and disadvantages of specific diets as a therapeutic component/measure
- discuss the advantages and disadvantages or risks of modern nutritional concepts such as BARF

CYTOLOGY LIVER/PANCREAS (CROSS SECTIONAL SUBJECT) (3H) [339]

Students should be able to:

- list and explain the techniques for taking and preparing cytological preparations from liver and pancreas
- explain the techniques of preparing and staining preparations from liver and pancreas.
- explain the microscopic examination of cytological specimens
- list the cytological characteristics of hepatocytes
- list the types of inflammation on the basis of the dominant cell population.
- identify the most important changes on images of cytological preparations (e.g. hepatic lipidosis, purulent inflammation, evidence of regeneration, intracanalicular cholestasis, tumour cell populations)

[338] 1.18

[339] 1.21

FORENSIC VETERINARY MEDICINE, PROFESSIONAL AND ETHICAL LAW [340]

Coordinator:
Fey

Instructors:
Fey, Roscher

Type of course:
lecture (1 CHW)

ECTS:
1

Introduction:
- knowledge of the law of obligation and its impact on purchase law
- requirements of due diligence of the veterinarian
- issues of liability that are important for the veterinary practice
- criminal aspects that may be of importance for the veterinary practice

Overall aims and objectives:
Students should be able to:
- reproduce the rules on the law of sales laid down in the Civil Code
- explain the legal differences between sales to end consumers and sales to others
- name the rules for warranty periods for different sales contracts
- name the rules for warranty periods for service contracts
- apply their knowledge of those articles that regulate the law of obligation, in particular its impact on purchase law
- list the general and specific requirements of due diligence of the veterinarian and describe the consequences in the case of a breach of these requirements
- enumerate issues of liability that are important for the veterinary practice and know ways to financially safeguard themselves against possible risks
- explain aspects of penal law that may be of importance for the veterinary practice

[340] 1.1, 1.2

Reading list:

- Althaus J., Ries, H.P., Schnieder K.-H.,Großbölting, R. (Hrsg.): Praxishandbuch Tierarztrecht. Schlütersche Verlagsgesellschaft 2006, 1. Auflage (2006), ISBN-13: 978-3899930207
- Brennecke D., Münow, F.: Existenzgründung kompakt. Veterinärspiegel Verlag 2008, ISBN: 978-3-86542-012-1

Electronic sources:

see StudIP:
https://studip.uni-giessen.de

Assessment:

a written examination (MCQ) within the framework of the Veterinary Medical Examination in "Forensic Veterinary Medicine, professional and ethical law" after the eighth semester

HUSBANDRY AND DISEASES OF FARMED FISH AND REPTILES/AMPHIBIANS [341]

Coordinator:

Lierz

Instructors:

Flamm

Course type:

Lecture (1 CHW)

ECTS

1

Prerequisites:

Veterinary Medical Examination

Introduction:

Farmed Fish:

Apart from parasitic, bacterial and viral infectious diseases, diseases caused by husbandry and the environment play an important role in farmed fish.

The husbandry and environmental conditions required for the various species of farmed fish as well as diseases resulting from husbandry errors are presented. Furthermore, the aetiology,

[341] 1.1, 1.18, 1.21, 1.23, 1.24, 1.33

pathogenesis, epidemiology, clinic, pathology, diagnosis and therapy as well as, in particular, prophylaxis of the most important viral, bacterial, mycotic and parasitic diseases are shown.

Reptiles/Amphibians:
The most important viral, bacterial, mycological and parasitic infectious diseases for reptiles and amphibians as well as important husbandry- and management-related diseases are discussed with regard to aetiology, epidemiology, pathogenesis, clinic, pathology, diagnostics, therapy and prophylaxis. In this context, aspects of analgesia and anaesthesia as well as surgery in reptiles and amphibians are also explained in more detail.

Overall aims and objectives:

Farmed Fish:
Students should be able to:

- name the husbandry conditions required for farmed fish, recognise common husbandry errors, discuss differential diagnoses and derive solution proposals
- know the technical requirements and socialisation problems of different fish species, evaluate them and derive solution strategies
- describe a complete examination procedure for an individual animal as well as for a fish livestock

Reptiles/Amphibians:
Students should be able to:

- name the most important infectious diseases of reptiles and amphibians, explain their aetiology and classify the respective significance of a disease outbreak for the individual animal, the livestock and humans
- recognise and describe the clinic and pathology of these infectious diseases in reptiles and amphibians and differentiate between them
- name the direct and indirect detection methods suitable for the respective pathogens and interpret examination results
- assess and decide whether or which therapeutic measures (including surgical and medicinal measures) are suitable for the treatment of the various diseases in reptiles and amphibians
- define and explain the possibilities of prophylaxis for the various infectious diseases as well as for important husbandry and management-related diseases of reptiles and amphibians

Reading list:

- "FISH DISEASE: Diagnosis and Treatment, Edward J. Noga, Mosby-Year Book, Inc, 367 pp. , ISBN 8138 2558 X, 2nd edition, published 2000

- BSAVA Manuel of Ornamental Fish, by William H. Wildgoose, 304 p., 2nd edition, published by Blackwell Pub ProfessionalMader, Reptile Medicine and Surgery, W.b. Saunders Company Jun 2007, ISBN: 1416053913, ISBN-13: 9781416053910
- Pees: Leitsymptome bei Reptilien: diagnostischer Leitfaden und Therapie. Publisher: Enke (2015), ISBN: 978-3-8304-1227-4 or e-Book: eISBN: 978-3-8304-1228-1
- Mader: Reptile Medicine and Surgery, Publisher: W.b. Saunders (2007), ISBN: 9781416053910
- Scheller, Pantchev: Parasitologie in Schlangen, Lizern und Schildkröten, Publisher: Chimaira (2008), ISBN: 978-3-89973-472-0

Assessment:
an oral exam within the framework of the Veterinary Medical Examination in "Poultry diseases" in the eleventh semester

DISEASES OF ORNAMENTAL/WILD AND DOMESTIC POULTRY [342]

Coordinator:
Lierz

Instructors:
Lierz, Möller, Heffels-Redmann

Course type:
Lecture (1 CHW)

ECTS
1

Prerequisites:
Veterinary Medical Examination

Introduction:
Infectious diseases are of great importance, especially in domestic poultry, but also in flocks of ornamental birds and in the wild bird population. The aetiology, pathogenesis, epidemiology, clinic, pathology, diagnosis and therapy, and especially prophylaxis of the most important viral, bacterial, mycotic and parasitic diseases are presented. In addition, common diseases caused by husbandry and management are discussed.

[342] 1.1, 1.18, 1.21, 1.23, 1.24, 1.33

Overall aims and objectives:

Students should be able to:

- describe the functioning of the poultry industry and the different ways of keeping poultry
- name the most important infectious diseases of ornamental, wild and domestic poultry, explain their aetiology and classify the respective significance of a disease outbreak for the individual animal, the livestock, the population and for humans
- recognise and describe the clinic and pathology of these infectious diseases and differentiate between them
- name the direct and indirect detection methods suitable for the respective pathogens and interpret examination results
- decide whether or which therapeutic measures are suitable for the treatment of the different infectious diseases and define and explain the possibilities of general and special prophylaxis, especially by vaccination, for the different infectious diseases
- name the most important diseases caused by husbandry and management, recognise, describe and differentiate their clinical and pathological picture and name therapeutic and prophylactic measures

Reading list:

- Siegmann, Neumann: Kompendium der Geflügelkrankheiten, Publisher: Schlütersche, 7th edition (2012), ISBN-13: 978-3-89993-083-2
- Rautenschlein, Ryll: Erkrankungen des Nutzgeflügels, publisher: utb, 1st edition (2014), ISBN 978-3-8252-8568-5 or e-book: https://hds.hebis.de/ubgi/Record/HEB368953955
- Chitty, Lierz: BSAVA Manual of Raptors, Pigeons and Passerine Birds, 1st edition (2008), BSAVA Company, ISBN: 978-1-905319046
- Pees: Leitsymptome bei Papageien und Sittichen: diagnostischer Leitfaden und Therapie. Publisher: Enke, 2nd edition (2011), ISBN: 9783830410843

Electronic learning materials:

see StudIP: Course "Anleitung zum selbstständigen wissenschaftlichen Arbeiten: Clinic for birds, reptiles, amphibians and fish (teaching material)"

Assessment:

an oral examination within the framework of the Veterinary Medical Examination in "Poultry Diseases" (TAppV § 42)

MEAT HYGIENE AND FOOD SCIENCE [343]

Coordinator:
Kehrenberg, Zens

Instructors:
Kehrenberg, Zens and assistants

Type of course:
lecture (4 CHW)

ECTS:
4

Introduction:
The course will serve to:

- obtain further knowledge on the topic of meat hygiene on the level of meat production and the placing on the market
- give information concerning the duties of the official veterinarian in the field of meat hygiene
- give information concerning the legal rules and regulations regarding the official inspections and the placing on the market of meat

Overall aims and objectives:
Students should be able to:

- give an insight into the historical development of meat hygiene and the Meat Hygiene Law (FRG and EU)
- explain the individual processes of meat production (including the laws and regulations)
- explain the principles and legal requirements regarding the official ante and post mortem inspection of animals for slaughter and (including laboratory tests) of domestic mammals (including poultry and game)
- describe the decisions and measures of labelling concerning this matter
- explain the principles and legal requirements regarding the placing on the market (including the microbiological criteria) of meat
- discuss the regulations regarding the import, export and transit of foodstuff of animal origin
- explain the legal requirements regarding the disposal of confiscates

[343] 1.1, 1.3, 1.7, 1.10, 1.21, 1.24, 1.34, 1.35

Reading list:

- D. M. Beutling: Lehrbuch der Schlachttier- und Fleischuntersuchung (2003), Verlag: Parey Bei Mvs; 1. Auflage (2003), ISBN-13: 978-3830440987 (exkl. der veralteten Rechtsmaterie)
- Verordnungen zum „EU-Hygienepaket“ (2004), inkl. der Verordnung zur Durchführung von Vorschriften zum gemeinschaftlichen Lebensmittelhygienerecht (BRD 2007)

Electronic sources:

are available at the homepage of the Institute of Veterinary Food Science (IFTN)
https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/nahrungsmittelkunde/institut/studium

see StudIP:
https://studip.uni-giessen.de

Scripts:

"Handouts/downloads" for each lecture block can be found on the homepage of the IFTN,
https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/nahrungsmittelkunde/institut/studium

Self-assessment:

a questionnaire is available on the homepage of the Institute of Veterinary Food Science (IFTN)
https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/nahrungsmittelkunde/institut/studium

Learning recommendations:

Students are advised to prepare themselves with the help of the respective handouts and a thorough reading of the relevant literature.

Assessment:

an oral and a practical examination within the framework of the Veterinary Medical Examination in “Meat hygiene” in the eleventh semester

Inspection Of Animals For Slaughter And Meat Inspection [344]

Coordinators:

Kehrenberg, Zens

Instructors:

Kehrenberg, Zens (+ assistants)

Type of course:

practical (2 CHW)

[344] 1.1, 1.3, 1.7, 1.10, 1.21, 1.24, 1.28, 1.34, 1.35

ECTS:

2

Introduction:

The practical (of a total of 30 hours per group) will serve to:

- present technological procedures of a slaughterhouse
- reason and demonstrate of the official inspection of animals for slaughter and meat (in particular concerning pigs and cattle) including the rules and regulations of meat hygiene control
- carry out a bacteriological examination and other laboratory tests
- give an expert opinion on post-mortem inspections

Overall aims and objectives:

Students should be able to:

- explain the principles and legal requirements of the official inspection of ante and post mortem meat inspection
- independently undertake an official meat inspection (including further examinations)
- write a certificate giving the result of the official meat inspection
- give an insight into the individual processes of meat production

Reading list:

- Vallant: Farbatlas der Schlachttierkörper-Pathologie bei Rind und Schwein (2004), Verlag: Enke; 1. Auflage (2003), ISBN-13: 978-3830410171
- Verordnung (EU) Nr. 2017/625, inkl. der Verordnung zur Durchführung von Vorschriften zum gemeinschaftlichen Lebensmittelhygienerecht (BRD 2007)

Electronic sources:

are available on the homepage of the Institute of Veterinary Food Science (IFTN)

https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/nahrungsmittelkunde/institut/studium

see StudIP:

https://studip.uni-giessen.de

Scripts:

"Handouts /downloads" for each lecture block can be found on the homepage of the IFTN

https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/nahrungsmittelkunde/institut/studium

Self-assessment:

a questionnaire is available at the homepage of the IFTN

https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/nahrungsmittelkunde/institut/studium

Learning recommendations:
Students are advised to prepare themselves with the help of the respective handouts and a thorough reading of the relevant literature.

Maximum of participants:
4 groups of 60 students (or 12 subgroups of 20 students)

Assessment:
during the practical, pre-examinations at the beginning of each day; an oral and a practical examination within the framework of the Veterinary Medical Examination in "Meat hygiene" in the eleventh semester

DAIRY SCIENCE II [345]

Coordinator:
Usleber

Instructors:
Usleber, Akineden

Type of course:
lecture (1 CHW)

ECTS:
1

Introduction:
- The hygiene of milk production, in particular milking technology and milking hygiene, industrial hygiene
- milk quality regulations
- the transport of delivered milk
- the production of drinking milk and dairy products (fermented milk products, dry milk products, cheese, butter, mixed milk products)
- the microbiology of milk and dairy products, in particular starter cultures
- probiotics
- spoilage organisms
- milk hygiene regulations

[345] 1.3, 1.10, 1.21, 1.24, 1.35

Overall aims and objectives:

Students should be able to:

- explain the relevance of the factors describing the quality and hygienic valence of milk during the primary production, as well as measures that guarantee the quality of dairy products and exclude any health hazards for human consumption, and assess the respective factors that have an influence on this
- explain the microbiological correlations that are important for milk and dairy products and define micro-organisms that can be found in milk with regard to their occurrence, relevance and detection
- explain the production of the most important dairy products and assess them with regard to aspects of hygiene and nutrition
- explain the basic principles that underlie the respective legal regulations concerning the above mentioned aspects

Electronic sources:

presentations of the content of the course are available as .pdf-files at StudIP

https://studip.uni-giessen.de

Assessment:

a written examination within the framework of the Veterinary Medical Examination in "Dairy science" after the eighth semester

COURSE IN MILK EXAMINATION [346]

Coordinator:

Usleber

Instructors:

Usleber, Akineden

Type of course:

seminar with practicals (1 CHW)

ECTS:

2

Introduction:

- A discussion of concrete aspects of milk hygiene and demonstrations respectively the carrying out of practical exercises under supervision

[346] 1.3, 1.10, 1.21, 1.24, 1.28, 1.35

- The taking of milk samples, cell count, bacteriological analysis of milking samples of each udder quarter, inhibitor test, physical quality parameters, verification of pasteurization, casein precipitation, starter cultures, methods of a colony count in milk, detection of pathogens in milk and dairy products

Overall aims and objectives:

Students should be able to:

- describe the method of analysis for raw milk within the framework of the milk quality examination and explain reasons for a deviation from standard values
- explain factors that affect the taking of samples as well as cytological and bacteriological findings in connection with sub-clinical mastitis, and further, explain the characteristics of important pathogens with regard to industrial hygiene
- describe methods for determining the physical-chemical quality parameters of milk and dairy products and interpret the findings with regard to set values
- describe the methods and principles of producing dairy products and name causes that can lead to problems in milk processing
- recognize important tools for the microbiological analysis of dairy products and interpret typical findings in context

Electronic sources:

the complete presentations of the content of the course are available as .pdf-files at StudIP
https://studip.uni-giessen.de

Assessment:

a written examination within the framework of the Veterinary Medical Examination in “Diary scinece” after the eighth semester

PATHOLOGICAL-ANATOMICAL DEMONSTRATIONS [347]

Coordinator:

Herden

Instructors:

Herden, Köhler, Henrich, Hirz

Type of course:

practical and seminar each lasting one hour (1 contact hour per week, every two weeks for two hours, in 2 alternating groups/over the period of 2 semesters)

[347] 1.24, 1.28, 1.33

ECTS:
1.5

Requirements:
Students must have attended the lecture on “General pathology” and the seminar on “General pathology”.

Introduction:
The participants of the course will work with material taken from routine necropsies of the Institute, archived material and material of slaughtered animals. The abnormalities of organs will be discussed in groups with an assistant. The pathological-anatomical and differential diagnoses will be collected and discussed. Each case will be discussed epicritically, referring to its possible etiologies, pathogenesis and clinical relevance.

Overall aims and objectives:
Students should be able to produce a forensically applicable organ report. This will include a complete description of the abnormalities of the organs, the formulation of the pathological-anatomical diagnoses, the differential diagnoses and the epicrisis.

Reading list:
- Dahme/Weiss: Grundriss der speziellen pathologischen Anatomie der Haustiere, Verlag: Enke; 6. völlig neu bearb. Auflage (2007), ISBN-13: 978-3830410485
- McGavin/Zachary: Pathologic Basis of Veterinary Disease, Verlag: Mosby; 4th ed. (2006), ISBN-13: 978-0323028707
- respectively the translated version: Pathologie der Haustiere: Allgemeine, spezielle und funktionelle Veterinärpathologie- mit Zugang zum Elsevier-Portal, Verlag: Elsevier, München (2009), ISBN-13: 978-3437582509 A

Electronic sources:
see StudIP:
https://studip.uni-giessen.de

Assessment:
final discussion/attestation at the end of the eighth semester; an oral and a practical examination within the framework of the Veterinary Medical Examination in “General pathology and Special pathological anatomy and histology in the eleventh semester

RADIOLOGY [348]

Coordinator:
Eley, von Pückler

Instructors:
Eley, von Pückler, Kehrenberg, Kost, Müller

Type of course:
lecture (2 CHW)

ECTS:
2

Introduction:
The course will cover the following fundamental issues:

- the properties and effects of ionising radiation
- the fundamentals of radiation biology
- the effects of ionising radiation on humans, animals, foodstuff, animal feed and the environment
- methods for the detection of the effects of radiation, and to determine the amount of radiation that employees and the animal owners may receive
- methods for the detection of a contamination with radioactive substances
- the physical-technical principles and principles of application of diagnostic imaging methods, including the alternatives to the application of ionising radiation
- the fundamental principles of radiation therapy,
- the statutory, practical and technical radiation protection of employees and animals owners (the examination will cover: numbers 4-8 of the basic course in radiation protection, according to the Appendix 1 of the directive "Radiation Protection in Veterinary Medicine"; GMBl 2005 p. 666)
- radiographic technology, the biologic effect of radiation, ultrasonic technology, computer tomography, magnetic resonance imaging, scintigraphy, PET/SPECT, food radiology

Overall aims and objectives:
Students should be able to name and explain the following aspects:

- the fundamental principles of the properties and effects of ionising radiation
- the fundamental principles of radiation biology

[348] 1.23

- the effects of ionising radiation on humans, animals, foodstuff, animal feed and the environment
- methods for the detection of the effects of radiation, and to determine the amount of radiation that employees and animal owners may receive
- methods for the detection of a contamination with radioactive substances
- the physical-technical principles and principles of application of diagnostic imaging methods, including the alternatives to the application of ionising radiation
- the fundamental principles of radiation therapy
- the statutory, practical and technical radiation protection of employees and carers of animals (the examination will cover: numbers 4-8 of the basic course in radiation protection, according to the Appendix 1 of the directive “Radiation Protection in Veterinary Medicine”; GMBl 2005 p. 666)

Reading list:

see StudIP:

https://studip.uni-giessen.de

Here, the appropriate and relevant legal texts and documents can be found.

Electronic sources:

lectures are available at StudIP

Learning recommendations:

the respective legislation, lectures available at StudIP

Assessment:

According to § 43 of the TAppV:

(2) Recognition of the successfully completed examination (according to paragraph 1) as basic course in radiation protection according to Appendix 1 of the directive “Radiation Protection in Veterinary Medicine”, if the respective authority has previously determined that the requirements (the content of Appendix 1 of the directive “Radiation Protection in Veterinary Medicine”) have been met.

(3) Students can only begin the acquisition of expertise required in the field of diagnostic radiology once they have successfully passed the examination in the examination subject “Radiology” during their clinical training. The content is based on the guidelines of the directive “Radiation Protection in Veterinary Medicine”.

A written examination within the framework of the Veterinary Medical Examination in “Radiology” after the seventh semester

ANIMAL WELFARE [349]

Coordinator:
Krämer

Instructors:
Krämer, Kuhne, Hornung

Course type:
Lecture (2 CHW)

ECTS
2

Introduction:
introduction to animal welfare legislation and ethology

Overall aims and objectives:
Students should be able to:

- relate ethological knowledge of different animal species to legal principles and husbandry requirements and place the subject in the complex of veterinary medicine

Reading list:
- "Kommentare zum Tierschutzgesetz", Hirtz, Maisack, Moritz, 2016

Scripts:
are created and made available as PDF in StudIP
https://studip.uni-giessen.de

Assessment:
part of the Animal Welfare exam

[349] 1.1, 1.7, 1.10, 1.20

8TH SEMESTER

BLOCKS	WEEKS	ECTS
Block Urinary Tract	3	3
Block Endocrinology	1	1
Block Laboratory Animals and Small Mammalian Patients	1	1
Block Reproduction	7	7
Block Livestock management	2	2
REGULAR COURSES	**CHW**	**ECTS**
Forensic Veterinary Medicine, Professional and ethical law **L**	1	1
Fish Diseases and Reptiles **L**	1	1
Functional Pathology **S**	1	1
Poultry Diseases **L**	1	1
Histopathology **P**	2	3
Food Science **L**	4	4
Food examination **P**	2	3
Pathological-anatomical Demonstrations **P**	1	1.5
Specific Pathology **S**	1	1
Combating Epizootic Diseases **L**	3	3
Elective Courses		
EXAMINATIONS		**ECTS**
Examination "Pharmacology and Toxicology"		1
Examination "Combating Epizootic Diseases and Infectious Disease Epidemiology"		2

Examination “Forensic Veterinary Medicine, Professional and ethical law”		2
Module-component Examination: “MCQ Internal Medicine” (20% Veterinary Medical Examination)		0.5
Module-component Examination: “MCQ Surgery and Anaesthesiology” (20% Veterinary Medical Examination)		0.5
Module-component Examination: “MCQ Reproductive Medicine” (20% Veterinary Medical Examination)		0.5

L= lecture, P= practical, S= seminar
CHW= contact hour per week (Semesterwochenstunde)
ECTS= European Credit Transfer and Accumulation System, Indication of Credit Points

Please note: further information regarding courses can be found at:
http://www.uni-giessen.de/cms/fbz/fb10/studium-und-prufungen/studium

Duration of block courses is given in “h =hours”, 1h =45 min

URINARY TRACT

Summary:
Along with polyuria with a resulting polydipsia, it is primarily a urinary incontinence, a urinary obstruction or a change in urinary colour which indicates a disease of the urinary tract. For this reason, it is very important being able to carry out and interpret the complete urinalysis. Imagining techniques are the other important methods to diagnose diseases of the urinary tract.

Courses in detail:

Institute of Pharmacology and Toxicology (Geyer et al.)

DIURETICS, ANTIDIURETICS L (2H)[350]

Students should be able to:

- classify and describe the differences in the effects of diuretics
- derive justifications for individually selected diuretics for the different indication
- weigh up necessary applications and contraindications (dehydration, potassium losses, etc.)

Institute of Veterinary Pathology (Herden, et al.)

PATHOLOGY URINARY TRACT L (4H) [351]

Students should be able to:

- identify the pathological processes and conditions of domestic animals
- explain the entities relating to the individual organ systems
- define and classify the diseases and explain them comprehensively in context to the clinical image
- explain the etiology and pathogenesis of the alterations as well as make the correct morphological diagnoses and discuss differential diagnoses

[350] 1.18

[351] 1.21, 1.24, 1.33

Clinic for Small Animals (Internal Medicine and Surgery) (Kramer, Moritz, Peppler, Thiel et al.)

URINALYSIS L (1H) [352]

Students should be able to:

- explain the most important steps of the urinalysis (macroscopic, specific gravity, dipstick, sediment) and the respective findings
- interpret possible findings of the most important tests (macroscopic, dipstick, sediment)
- define and interpret the terms “isosthenuria”, “hyposthenuria”, “hypersthenuryia”
- assess the main components of the sediment (cells, crystals, cylinder, microorganisms) and interpret their clinical relevance

IMAGING KIDNEY L (2H) [353]

Students should be able to:

- assess with radiographic means the position, size and shape of the kidneys in dogs and cats
- identify essential pathological alterations

ACUTE RENAL INSUFFICIENCY L (1H) [354]

Students should be able to:

- distinguish between acute and chronic renal insufficiency
- list the most common causes of an acute renal failure
- recognize and interpret the problems of an acute renal failure (electrolyte imbalance, acid-base- shift, oliguria)
- discuss therapeutic methods in a case of oliguric renal insufficiency

FLUID THERAPY L (1H) [355]

Students should be able to:

- quantify dehydration and arrange a fluid therapy for one patient
- depending on the indication, choose between the different infusion solutions and calculate the amounts required

[352] 1.21

[353] 1.23

[354] 1.18, 1.21

[355] 1.18

Chronic Kidney Disease L (2h) [356]

Students should be able to:

- name possible causes of chronic kidney disease
- discuss the consequences of chronic kidney disease
- differentiate chronic kidney disease from acute kidney disease
- explain therapy options for chronic kidney disease
- name the prognosis in different stages of chronic kidney disease

Electrolytes L (1h) [357]

Students should be able to:

- deduce the most important differential diagnoses of mechanisms of hyper/hypo-natraemia, -chloraemia, -phosphataemia and -magnesaemia
- interpret the findings of patients suffering from electrolyte disorders

Urinary Stones - Dog L (1h) [358]

Students should be able to:

- discuss the theories of urolithiasis formation
- explain the pathomechanisms of specific uroliths
- describe the possibilities of imaging diagnostics, the problems present in this, as well as the racial predispositions and the milieu present in the urinary tract for specific uroliths
- describe the therapeutic options and prophylactic measures for the various uroliths

Acid-base balance L (1h) [359]

Students should be able to:

- define and interpret the terms "acidaemia", "acidosis" "alkaliaemie", "alkalosis"; "hypoxaemia" "hypoxia", "hypercapnia" and "hypocapnia"
- list and explain the most important regulatory mechanisms of the acid-base balance,
- explain the requirements for a blood gas analysis (sample material, equipment)
- interpret patient findings with the help of [HCO3-] pH-value and CO2 partial pressure and explain which type of deviation from the acid-base balance is the case

[356] 1.18, 1.21

[357] 1.21

[358] 1.18, 1.21, 1.23

[359] 1.18, 1.21

(respiratory/metabolic acidosis or alkalosis) and whether the patient shows signs of compensation
- list and explain possible differential diagnoses for respiratory/metabolic acidosis or alkalosis

FLUTD- Internal Medicine L (1h) [360]

Students should be able to:

- name clinical symptoms of lower urinary tract disease
- Describe the progression of a pure lower urinary tract disease (Feline lower urinary tract disease) to a systemic disease (Pandora's syndrome)
- list predisposing factors for lower urinary tract disease
- name possible causes of lower urinary tract disease in the cat
- describe the diagnostic and therapeutic procedures for cats with lower urinary tract disease

Urinary surgery L (2h) [361]

Students should be able to:

- list and define the different surgical diseases of the urinary tract of small animals
- give the indications for surgical intervention in diseases of the urinary tract

Surgery urinary tract prostate L (2h) [362]

Students should be able to:

- name surgical diseases of the urinary tract and the prostate and explain their etiology and diagnostics
- explain and discuss possibilities of surgical intervention in diseases of the prostate

Surgical & Neurological Urinary Disorders L (3h) [363]

Students should be able to:

- name the definitions of neurological urinary disorders
- explain the diagnostic and therapeutic steps of incontinence and lack of urine output

[360] 1.18, 1.21

[361] 1.18

[362] 1.18

[363] 1.18, 1.21

URINARY TRACT INFECTIONS - SMALL ANIMAL L (1H) [364]

Students should be able to:

- name the most important bacterial pathogens of urinary tract infections
- describe the differences between persistent and recurrent urinary tract infections
- list predisposing factors for urinary tract infections
- list therapeutic options for bacterial urinary tract infections

Clinic for Horses (Internal Medicine and Surgery) (Fey, Roscher, Röcken et al.)

DISEASES OF THE EQUINE URINARY TRACT - CLINICAL AND FURTHER DIAGNOSTICS L (1H) [365]

Students should be able to:

- list possibilities of the diagnostics for diseases of the equine urinary organs
- define and explain the most important physiological and patho-physiological mechanisms of the function of the urinary organs

EQUINE URINARY DISEASES - RENAL DISEASES L (1H) [366]

Students should be able to:

- define the most important etiological causes of a renal disease in horses
- name and apply the fundamentals of the therapy of equine renal diseases

EQUINE URINARY DISEASES - DISEASES OF THE BLADDER AND URINARY TRACT L (1H) [367]

Students should be able to:

- define the most important etiological causes of a disease of the bladder and the urinary tract in horses
- name and apply the fundamentals of the therapy of the bladder and the urinary tract in horses

[364] 1.18

[365] 1.21

[366] 1.18

[367] 1.18

Clinic for Ruminants (Internal Medicine and Surgery) (Sickinger et al.)

DISEASES OF THE URINARY TRACT - RUMINANTS: GENERAL L (2H) [368]

Students should be able to:

- name the different indications for a urinalysis in ruminants, carry out a urinary sampling and an examination of ruminants
- explain specific clinical and laboratory-diagnostic findings in the case of diseases of the urinary organ

KIDNEY - RUMINANTS L (1H) [369]

Students should be able to:

- explain the causes and symptoms, as well as the prognosis and treatment of the following diseases of the kidney:
    - chromo-proteinamic nephroses
    - amyloidnephrosis
    - nephritis
    - pyelonephritis
    - clostridial disease of small ruminants

DISEASES OF THE URINARY TRACT - CALF L (1H) [370]

Students should be able to:

- explain the causes and symptoms, as well as the prognosis and treatment of the following diseases:
    - omphalourachitis
    - cystitis
    - injury and obstruction of the urethra
    - nephritis
    - Malformations (e.g. ectopic ureter)

[368] 1.1, 1.21

[369] 1.1, 1.18

[370] 1.1, 1.18

Miscellaneous

Clinical Demonstrations S (6h) [371]

The content of the clinical demonstrations will refer to the patients currently treated at the clinic and can therefore not be given beforehand.

Physiology - Kidney (Cross Sectional Subject) (1h)

Students should be able to:

- know the comparative anatomical structure of the kidney in different species
- describe the structure and function of the *glomerulum*, its filter and its regulation (macula densa) and understand primary urine formation
- understand diagnostic tests to determine kidney function
- understand the importance of the kidney in the reabsorption of important molecules and electrolytes, the excretion of urinary substances, the concentration of the final urine and the production of numerous renal hormones
- discuss the basics of glomerulonephritis

Radiography, urine, blood (Cross Sectional Subject) (3h) [372]

Students should be able to:

- carry out the preparation and microscopic examination of specimens of urine sediment
- list and assess the main components of urine sediment (cells, cylinders, crystals)
- list the special features of the urine of different species (horses, dogs, cats)
- carry out and evaluate a measurement of specific gravity (iso-, hypo-, hypersthenuria
- interpret clinical, laboratory-diagnostic and radiological patient findings and deduce possible differential diagnoses

Bacteriology Urinary Tract (Cross Sectional Subject) (1h)[373]

Students should be able to:

- discuss virulence factors of different pathogens
- explain the symptoms of lower and upper urinary tract infections
- name the most common bacterial pathogens that cause urinary tract infections

[371] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

[372] 1.21, 1.23

[373] 1.21

ENDOCRYNOLOGY

Summary:
Endocrine disorders, which mainly occur in small animals, are of particular relevance. The most important representatives of these problems are diseases of the thyroid gland, adrenal gland, endocrine pancreas and pituitary gland. Most cases respond well to therapy and a good outcome is common. Knowledge of regulatory pathways of hormone systems is essential to understand the various diagnostic tests employed (stimulatory and suppression tests)

Courses in detail:

Institute of Pharmacology and Toxicology (Geyer et al.)

PHARMACOLOGY DIABETES MELLITUS L (2H) [374]

Students should be able to:

- explain the metabolisms of carbohydrate and aliphatic acid, including dysfunctions in the case of insulin insufficiency diabetes (type 1) and disrupted insulin secretion with insulin resistance (type 2)
- explain the regulation of insulin secretion and the effects of insulin on tissue that is sensitive to insulin (muscle, liver, fat)
- give the classification and relevance of diabetes, including the different etiologies of type 1 and type 2
- assess various possibilities for therapeutic intervention using insulin and oral anti-diabetics
- explain the varying duration of the effects of insulin, (ultra) rapid-acting insulin analogues, insulin formulations, and long-acting insulin analogues (basal-insulin), including possible unwanted effects and emergency measures in the case of hypoglycaemia

Institute of Veterinary Pathology (Herden, et al.)

ENDOCRINE PATHOLOGY L (2H) [375]

Students should be able to:

- identify pathological processes and conditions of domestic animals
- explain the entities that concern individual organ systems

[374] 1.18

[375] 1.21, 1.24, 1.33

- define and classify the diseases and explain them comprehensively in context to the clinical image
- explain the etiology and pathogenesis of the alterations as well as make the correct morphological diagnoses and discuss differential diagnoses

Clinic for Small Animals (Internal Medicine and Surgery) (Kramer, Moritz, Schneider, Peppler, Thiel et al.)

PU/PD L (1H) [376]

Students should be able to:

- understand water homeostasis
- differentiate the clinical picture of PU/PD from other symptoms with altered urine output (pollakiuria, incontinence)
- discuss the various differential diagnoses for PU/PD and the underlying mechanisms
- discuss the possibilities of diagnostics for PU/PD

HYPERADRENOCORTICISM L (1H) [377]

Students should be able to:

- discuss the pathogenesis and patho-physiology of the production of steroid hormones and their potential dysregulation
- discuss the epidemiology, clinic and complications of canine (and feline) hyperadrenocorticism
- induce appropriate diagnostic measures and correctly interpret the results in connection with the clinic
- list possible therapeutic measures for hyperadrenocorticism and monitor them

HYPOADRENOCORTICISM L (1H) [378]

Students should be able to:

- discuss the pathogenesis and patho-physiology of the production of steroid hormones and their potential dysregulation
- discuss the epidemiology, clinic and complications of canine hypoadrenocorticism
- list possible causes of hypoadrenocorticism and induce the necessary steps to arrive at a diagnosis

[376] 1.21

[377] 1.18, 1.21

[378] 1.18, 1.21

- discuss the correct treatment during a hypoadrenergic crisis as well as with regard to the long-term consequences

HYPOTHYROIDISM L (1H) [379]

Students should be able to:

- discuss the physiology of the production of thyroid hormones
- explain the causes of a hypothyroidism in dogs
- discuss the epidemiology, clinic and complications of hypothyroidism in dogs
- carry out diagnostic tests and interpret the results correctly
- explain the treatment of hypothyroidism

HYPERTHYROIDISM L (1H) [380]

Students should be able to:

- discuss the physiology of the production of thyroid hormones
- recognize the causes of feline hyperthyroidism, its complications and clinic
- induce diagnostic measures and correctly interpret their results
- list possible therapeutic measures and their advantages and disadvantages

DIABETES MELLITUS - DOG L (1H) [381]

Students should be able to:

- explain the patho-physiology of the glucose metabolism for the different types of diabetes
- discuss the clinic and potential complications
- explain all the diagnostic tests that are necessary for diabetic patients
- explain how to correctly treat a dog suffering from diabetes mellitus (insulin, diet)

DIABETES MELLITUS - CAT L (1H) [382]

Students should be able to:

- explain the patho-physiology of the glucose metabolism for the different types of diabetes
- discuss the clinic and potential complications
- explain all the diagnostic tests that are necessary for diabetic patients
- explain how to correctly treat a cat suffering from diabetes mellitus (insulin, diet)

[379] 1.18, 1.21

[380] 1.18, 1.21

[381] 1.18, 1.21

[382] 1.18, 1.21

Diabetic Ketoacidosis - Small Animal L (1h) [383]

Students should be able to:

- discuss the pathophysiology, symptoms and diagnosis of diabetic derailment
- discuss the complications to be expected
- discuss therapy with differences between DK and DKA
- discuss the prevention of the derailment

Hypercalcaemia L (1h) [384]

Students should be able to:

- explain the physiology and pathophysiology of calcium regulation
- list the differential diagnoses of hypercalcaemia
- name the diagnostic measures in the presence of hypercalcaemia
- list the specific and non-specific therapeutic measures in the presence of hypercalcaemia
- list the sequelae of hypercalcaemia

Rare Endocrinopathies L (1h) [385]

Students should be able to:

- name the hormones of the adrenal gland and assign them to the corresponding production site within the adrenal gland
- describe the diagnostics and therapeutic measures for phaeochromocytoma, hyperaldosteronism and insulinoma
- list the diagnostic options for detecting dysregulation of growth hormones

Surgery Endocrinology L (1h) [386]

Students should be able to:

- assess surgical diseases of the adrenal gland, pancreas, and the thyroid gland and create a therapeutic plan
- discuss and define the surgical fundamental principles of adrenal surgery
- discuss the surgical fundamental principles of thyroid surgery
- deduce the underlying diseases of the adrenal glands and thyroidea

[383] 1.18, 1.21

[384] 1.18, 1.21

[385] 1.18, 1.21

[386] 1.18

Clinic for Horses (Internal Medicine and Surgery) (Fey, Roscher, Röcken et al.)

EQUINE METABOLIC SYNDROME (EMS) - HORSES L (1H) [387]

Students should be able to:

- name the criteria for diagnosing equine metabolic syndrome
- explain the difference between obesity and EMS worthy of treatment
- list causes of this metabolic disease
- name diagnostic tests for the determination of insulin resistance
- explain management measures, feeding and possible medication of EMS patients

DYSFUNKTION EQUINE HYPOPHYSISE (PPID) - HOURSES L (1H) [388]

Students should be able to:

- indicate the aetiology of PPID
- name pathophysiological correlations and special features of PPID in comparison to Cushing's syndrome in dogs and humans
- list typical clinical and laboratory diagnostic findings, - name and evaluate laboratory diagnostic tests
- name the therapy of choice
- explain further therapeutic measures

Clinic for Ruminants (Internal Medicine and Surgery) (Sickinger et al.)

BOVINE KETOSIS L (1H) [389]

Students should be able to:

- explain the relevance of this metabolic disorder for modern dairy farming
- name and assess the factors which encourage a development of ketoses
- list the methods that can be used to diagnose metabolic disorders
- point out appropriate measures of treatment and prophylaxis

[387] 1.18, 1.21

[388] 1.18, 1.21

[389] 1.1, 1.18, 1.21

Miscellaneous

Clinical Demonstrations (2h) [390]

The content of the clinical demonstrations will refer to the patients currently treated at the clinic and can therefore not be given beforehand.

Refresher course in physiology of hormones (Cross Sectional Subject) (1h)

Students should be able to:

- discuss the normal control circuits of hormone regulation
- describe influences on hormone production
- describe important laboratory-diagnostic procedures

Laboratory And Small Mammalian Patients

Summary:

Laboratory animals (rodents, lagomorphs, guinea pigs) are commonly used in research. These animals require special attention concerning their keeping and have to be treated in a special manner – in accordance with the animal protection act – also to ensure the conclusiveness of experiments. Usually, examination methods for laboratory animals differ from those used for other animal species. These differences, as well as frequent problems in the keeping of laboratory animals will be discussed. This block will furthermore thoroughly deal with small mammalian patients, an increasingly relevant part of the small animal practice.

Further details (e.g. reading list) on the individual courses can be found online at:
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/studium

Courses in detail:

Clinic for Small Animals - Pets (Göbel et al.)

Clinical examination and diagnostics of diseases in small mammalian patients L (1h) [391]

Students should be able to:

- ask most important questions during history taking
- describe the particularities of the clinical examination

[390] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

[391] 1.15, 1.17, 1.21, 1.23

- give special methods how to palpate and auscultate small mammels
- prove the importance of radiographic examinations by illustrating the differences in species and parts of the body
- assess the importance of ultrasound, whereupon the topography of organs is repeated, in the individual body cavities,
- describe the application of the ECG for small mammal patients

FRACTURES IN SMALL MAMMALS - CAUSES AND DIAGNOSTICS L (1H) [392]

Students should be able to:

- enumerate the causes of fractures of the limbs in small mammal patients
- specify the essential requirements for the obtaining of radiographic images for precise diagnostics with regard to the regulations for radiation protection
- assess radiographic images
- point out possibilities of conservative and surgical treatments of limb fractures

SURGICAL TREATMENT OF FRACTURES IN SMALL MAMMALS L (1H) [393]

Students should be able to:

- point out problems that may arise in the surgical treatment of front- or hind-limbs (especially the tibia fracture)
- explain how these can be prevented respectively treated
- explain the indications for surgical treatment
- discuss the administration of analgesics and antibiotics following surgical care

DIABETES MELLITUS IN SMALL MAMMALS L (1H) [394]

Students should be able to:

- explain the etiology, typical symptoms, diagnosis and treatment of the disease
- describe the differences in treatment according to the different species

INFECTIOUS DISEASES IN FERRETS L (1H) [395]

Students should be able to:

- list the numerous known viral and bacterial diseases in ferrets

[392] 1.18, 1.23

[393] 1.18, 1.31

[394] 1.18, 1.21

[395] 1.18, 1.21

- discuss the symptoms, the diagnosis and possible treatment measures

ANAESTHESIA FOR SMALL MAMMALS L (1H) [396]

Students should be able to:

- explain the surgical preparation, injective anaesthesia, inhalative anaesthesia, intubation, and the monitoring of anaesthesia
- assess the importance of the general examination, the period of feeding restrictions, the pre-medication and the shock prophylaxis and analgesia
- present a simple sedation
- explain the advantages and disadvantages of injective anaesthesia, while taking into account the different types of injective methods
- present the injective narcotics and their antagonists
- discuss the fields of application as well as the advantages and disadvantages of mere inhalative anaesthesia
- describe the technical equipment necessary for mere inhalative anaesthesia and carry out the inhalative anaesthesia
- explain the monitoring of anaesthesia, the surgical preparation as well as the post-surgical care

ENDOCRINE DISORDERS IN SMALL MAMMALS L (1H) [397]

Students should be able to:

- explain the etiology, symptoms, diagnosis, and forms of treatment, as well as the prognosis for the insulinoma in ferrets
- describe the cause, symptoms, diagnosis, treatment, and in particular, the effect of the drug
- leuprolidacetat in cases of hyperadrenocorticism in ferrets
- explain the symptoms and the treatment of hyperoestrogenism in ferrets
- name the symptoms, diagnosis and treatment of ovarian cysts in guinea pigs
- name thyroid diseases in the small mammalian patient

[396] 1.30

[397] 1.18, 1.21

INTENSIVE CARE OF SMALL MAMMALS L (1H) [398]

Students should be able to:

- explain the anatomy of the veins with regard to the administration of fluids, taking into account the differences of the various species, and the intraperitoneal and intraosseous administration of fluids
- calculate amounts and dosages for the administration of fluid
- discuss the advantages and disadvantages of manual force-feeding and force-feeding via the feeding tube
- name preparations for the force-feeding of different species
- recognize pain and point out the common drugs used for pain therapy
- explain problems in the administration of antibiotics for small mammals, including the advantages and disadvantages of the different antibiotics

ENZEPHALITOZOON CUNICULI- PET RABBIT DISEASE L (1H) [399]

Students should be able to:

- explain cause, clinic, diagnosis and therapy of the disease
- identify differential diagnoses

Professorship for Laboratory Animal Welfare and Ethology

LABORATORY ANIMAL SCIENCE L (11H) [400]

Coordinator:
Krämer

Instructor:
Krämer

Course type:
Lecture (1CHW)

ECTS:
1

[398] 1.18, 1.31
[399] 1.18, 1.21, 1.24
[400] 1.1, 1.7, 1.10

Introduction:

The lecture Laboratory Animal Science deals with the legal basis required by the authorities in dealing with laboratory animals. The European animal protection regulations and their implementation in and significance for national legislation form the basis. In addition, the historical development of the concept of animal protection, the status of animal protection in the EU and in Europe as well as the history of laboratory animal science are discussed. The lecture discusses replacement and supplementary methods to animal experiments on the basis of the 3R concept of Russell and Burch (refinement, replacement, reduction) and explains the recognition and evaluation of burdens in animal experiments and possibilities of burden reduction. Students are taught the basics of animal ethics and the ethical justifiability of animal experimentation, as well as the procedure of approval procedures at authorities and areas of responsibility and competences around animal experimentation. Passing the written exam at the end of the lecture certifies successful participation in the lecture.

Overall aims and objectives:

Students should be able to:

- describe the European and national legal basis for animal experiments and name the most important laws and regulations
- discuss replacement and supplementary methods of animal experiments, especially with regard to the 3Rs (replacement, reduction, refinement)
- assess the stress caused by an experiment and explain possibilities for minimising the stress
- explain the procedure of an authorisation procedure and the involved authorities
- explain the basics of animal ethics
- discuss the ethical justifiability of an animal experiment and weigh up the burdens arising from the experiment against possible benefits

Reading list:

see lecture

Electronic sources:

https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/e-learning

Learning recommendations:

see lecture

Miscellaneous

CLINICAL DEMONSTRATIONS S (2H) [401]

The content of the clinical demonstrations will refer to the patients currently treated at the clinic and can therefore not be given beforehand.

REPRODUCTION

Summary:

This block will deal with the physiology and pathology of the reproductive organs, the mammary gland and the reproductive function, as well as with biotechnological procedures used for domestic mammals. The focus will be on the species cat, dog, pig, sheep, goat, cow and horse. Furthermore, those domestic animals and small mammels that are most common in Germany will be discussed.

Further details (e.g. reading list) on the individual courses can be found online at:
https://www.uni-giessen.de/fbz/fb10/studium-und-prufungen/studium

Courses in detail:

Institute of Pharmacology and Toxicology (Geyer et al.)

ANTI-INFECTIVES 6 - MACROLIDES, LINCOSAMIDES AND FENICOLS L (1H) [402]

Students should be able to:

- name the structure, mechanism of action, type and spectrum of action, oral bioavailability, distribution/mobility, PK/PD parameters, therapeutic range and adverse drug reactions of the antibiotic classes macrolides, lincosamides and fenicols
- describe the currently available preparations with indications and the current resistance situation

ANTI-INFECTIVES 7 - PLEUROMUTILINS, IONOPHORES AND FUSIDANS L (1H) [403]

Students should be able to:

[401] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28
[402] 1.10, 1.18, 1.25, 1.27
[403] 1.10, 1.18, 1.25, 1.27

- name the antibiotic classes of pleuromutilins, ionophores and fusidans structure, mechanism of action, type, spectrum, oral bioavailability, distribution/mobility, PK/PD parameters, therapeutic range and adverse drug reactions
- reflect the currently available preparations with indications and the current resistance situation

ANTI-INFECTIVES 8 - ANTIBIOTIC GUIDELINES: ASPECTS OF THE USE OF ANTIBIOTICS L (1H) [404]

The students are able to reproduce the contents of the antibiotics guidelines and they are equipped with their knowledge from the previous antibiotics lectures to implement the theoretical knowledge in the later application in veterinary practice.

Institute of Veterinary Pathology (Herden, et al.)

PATHOLOGY REPRODUCTIVE ORGANS I L (3H) [405]

Students should be able to:

- identify the pathological processes and conditions of domestic animals
- explain the entities relating to the individual organ systems
- define and classify the diseases and explain them comprehensively in connection with the clinical picture
- explain the aetiology and pathogenesis of these developments, as well as confirm the correct morphological diagnoses and discuss differential diagnoses

Clinic for Reproduction (Wehrend, Wrenzycki et al.)

FEMALE REPRODUCTIVE ORGANS L (1H)

Students should be able to:

- explain the function and anatomy of the female sexual organs from a clinical perspective

SEX DETERMINATION L (1H)

Students should be able to:

- list the factors of the determination of the sex of domestic mammals and point out their properties and functions (as far as known)
- explain the procedure of male and female sex determination

[404] 1.10, 1.18, 1.26

[405] 1.21, 1.24, 1.33

- explain the concept of basic femaleness
- explain the conversion of indifferent predispositions into the respective dimorphic organs or structures existent in the male or female sex
- give an outline of the mechanisms of sex determination of birds, reptiles and fish
- list important disruptions of sex determination of domestic mammals and explain their causes

Female endocrine regulatory circuits L (1h)

Students should be able to:

- explain the basic principles of hormonal effects
- describe the structure of the regulatory circuit that controls the female sexual functions and the components and factors involved
- explain the structure of the following hormones and list their properties and most important effects concerning the regulation of the ovarian cycle: GnRH, FSH, LH, Inhibin, Estradiol-17β, progesterone, PGF2α, melatonine
- explain the biosynthesis of sexual steroids

Cycle - horses L (1h)

Students should be able to:

- describe the cycle of the mare and its regulation, as well as explain possible methods of the diagnostics of the cycle

Cycle - dog L (1h)

Students should be able to:

- describe the cycle of the bitch and its regulation, as well as explain possible methods of the diagnostics of the cycle

Cycle - cat L (1h)

Students should be able to:

- describe the cycle of the cat and its regulation, as well as explain possible methods of the diagnostics of the cycle

Cycle - swine L (1h)

Students should be able to:

- describe the cycle of the sow and its regulation, as well as explain possible methods of the diagnostics of the cycle

CYCLE - RUMINANTS L (1H)

Students should be able to:

- describe the cycle of the cow, sheep and goat and its regulation, as well as explain possible methods of the diagnostics of the cycle

APPLICATION OF HORMONES - CATTLE/PIGS L (3H) [406]

Students should be able to:

- explain, respectively list, the structure and effects (and, where applicable, the unwanted side-effects) of the following hormones (and, where applicable, their synthetic analogues): GnRH, LH, FSH, hCG, eCG, progesterone, estrogens, PGF2α
- list the fields of application of the hormones mentioned above, respectively active substances with regard to the treatment of fertility disorders in female cattle and pigs
- discuss the methods and limitations of conventional hormonal treatments of reproductive disorders in cattle and pigs

BIOTECHNOLOGY FEMALE 1+2 L (2H)

Students should be able to:

- explain the basic principles of the biotechnologies mentioned above, as well as discuss the advantages and disadvantages and possible problems of these procedures
- discuss the possibilities, limitations and risks of modern biotechnologies

MALE ENDOCRINE REGULATORY CIRCUIT L (1H)

Students should be able to:

- explain the structure of the regulatory circuit that controls the sexual functions of male domestic mammals
- list the effects of the hormones involved in the regulatory circuit of male domestic mammals
- explain the changes in the area of the regulatory circuit during puberty
- explain seasonal influences on the endocrine system of male mammals

APPLICATION OF HORMONES - HORSES L (1H) [407]

Students should be able to:

[406] 1.18

[407] 1.18

- describe the characteristics of the cyclic regulation of the mare and its impact on the possibilities of manipulation by means of hormone administrations
- explain the basic principles of the aforementioned applications of hormones in mares and list their indications
- discuss the relevance, possibilities and risks of the aforementioned therapeutic measures

APPLICATION OF HORMONES - SMALL ANIMALS L (1H) [408]

Students should be able to:

- describe the active substances and compounds commonly used in Germany for the treatment of dogs and cats and explain their field of indication and their unwanted side-effects

OOGENESIS AND FOLLICULOGENESIS L (1H)

Students should be able to:

- explain, respectively define, the following terms: oogenesis, folliculogenesis, primordial-/ primary/ secondary/ tertiary-/ Graaf 's follicle, recruitment, selection, dominance, ovulation, luteinisation, granulose cells, pellucid zone, theca, Hohlweg-effect
- illustrate the process of oogenesis and folliculogenesis
- explain the mechanisms leading to ovulation
- list the functions of FSH, LH, estradiol.17ß and inhibin with regard to oogenesis and folliculogenesis
- describe essential differences between the species with regard to ovarian activity

MALE REPRODUCTIVE PHYSIOLOGY L (1H)

Students should be able to:

- explain the aforementioned male reproductive functions respectively processes and describe essential differences between the species

BIOTECHNOLOGY MALE 1 +2 L (2H)

Students should be able to:

- list the “milestones” in the history of the development of instrumental insemination,
- explain the extraction and assessment of ejaculates
- explain the methodology of cryo-preservation of ejaculates

[408] 1.18

- describe the types of confectioning of sperm and insemination boxes for the most important domestic species
- explain the methodology for the preparation of sexed sperm

DISEASES OF THE MALE REPRODUCTIVE ORGANS 1 - 4 L (4H) [409]

Students should be able to:

- describe the causes, symptoms, prognosis and treatment for disorders in the area of the penis and prepuce
- describe the causes, symptoms, prognosis and treatment for the previously discussed disorders in the area of the scrotum, the testes, epididymis and accessory sex glands
- describe current views on the etiology of cryptorchidism and its different forms,
- explain methods for the diagnosis of cryptorchidism
- explain how to proceed in of cases of cryptorchidism with regard to the species, age and findings

MATING INFECTIONS L (1H) [410]

Students should be able to:

- list the most important mating infections in native domestic animals
- describe measures for the prevention of mating infections

DISEASES OF THE VAGINA, CERVIX L (1H) [411]

Students should be able to:

- describe the most important diseases of the vagina and cervix and explain the appropriate therapeutic measures

SUPPRESSION OF FEMALE REPRODUCTION L (1H) [412]

Students should be able to:

- list the indications and starting points for the suppression of the female reproductive functions
- explain the methods and risks of a suppression of the female reproductive functions

[409] 1.18, 1.21

[410] 1.18, 1.24

[411] 1.18

[412] 1.18

DISEASES OF THE OVARY + FALLOPIAN TUBE L (2H) [413]

Students should be able to:

- list clinically significant diseases of the ovary and fallopian tube and explain their causes and pathogenesis

DISEASES OF THE UTERUS IN RUMINANTS AND PIGS L (1H) [414]

Students should be able to:

- list clinically significant diseases of the uterus in cattle and pigs and explain their causes and pathogenesis
- develop concepts for the therapy and prophylaxis of clinically significant diseases of the uterus in cattle and pigs

DISEASES OF THE UTERUS - HORSES L (2H) [415]

Students should be able to:

- describe the most important diseases of the uterus in mares and explain the respective therapeutic measures

INSTRUMENTAL INSEMINATION L (2H)

Students should be able to:

- describe the theoretical basic principles of the artificial insemination of horses, cattle, pigs, sheep, goats and dogs
- give a list of the most important legal regulations that result from the animal breeding regulations concerning artificial insemination

FERTILITY DISORDERS - SMALL ANIMALS L (2H) [416]

Students should be able to:

- describe the diagnostic procedures for the leading symptoms discussed and explain the underlying patho-physiological mechanisms that cause these disorders

[413] 1.18

[414] 1.18

[415] 1.18

[416] 1.18, 1.21

ENDOCRINE REGULATION OF GESTATION L (1H)

Students should be able to:

- explain the maternal recognition of gestation (if known for the different species)
- outline the most important hormonal alterations associated with gestation with regard to the species and explain their physiological significance (if known)
- explain animal species differences in placentation

BIRTH PUERPERIUM - SMALL ANIMALS L (3H) [417]

Students should be able to:

- describe the process of a normal birth and the course of puerperium in dogs and cats, as well as the obstetrical examination
- explain the course of a caesarean section and the resuscitation of pups

GESTATION OF RUMINANTS L (1H) [418]

Students should be able to:

- describe significant features of the gestation of cattle, sheep and goat that are specific to the different species
- explain possible methods of the clinical and hormonal diagnostics of gestation
- list possibilities of the induction of abortion and birth for cattle, sheep and goat and explain their functions

GESTATION OF PIGS L (1H) [419]

Students should be able to:

- describe significant features of the gestation of pigs that are specific to the species
- explain possible methods of the clinical and hormonal diagnostics of gestation
- list possibilities of the induction of abortion and birth for pigs and explain their functions

GESTATION OF HORSES L (1H) [420]

Students should be able to:

- describe significant features of the gestation of horses that are specific to the species

[417] 1.17, 1.18, 1.19

[418] 1.18, 1.21, 1.23

[419] 1.18, 1.21, 1.23

[420] 1.18, 1.21, 1.23

- explain possible methods of the clinical and hormonal diagnostics of gestation
- list possibilities of the induction of abortion and birth for horses and explain their functions

GESTATION OF SMALL ANIMALS L (1H) [421]

Students should be able to:

- describe significant features of the gestation of dogs and cats that are specific to the different species
- explain possible methods of the clinical and hormonal diagnostics of gestation
- list possibilities of the induction of abortion and birth for dogs and cats and explain their functions

GESTATION DISORDERS L (3H)

Students should be able to:

- describe the systematic of gestation disorders and describe the underlying patho-physiological mechanisms

DYSTOCIA - HORSES 1 +2 L (2H) [422]

Students should be able to

- explain the physiological birth process of mares, the detection of possible deviations and their causes, as well as the carrying out of the obstetric examination and conservative obstetrics
- describe measures to treat dystocia and explain the indication, preparation and carrying out of surgical obstetrics

DYSTOCIA - SWINE L (1H) [423]

Students should be able to

- explain the physiological birth process of pigs, the detection of possible deviations and their causes, as well as the carrying out of the obstetric examination and conservative obstetrics, and explain the indication, preparation and carrying out of surgical obstetrics

[421] 1.18, 1.21, 1.23

[422] 1.17, 1.18

[423] 1.17, 1.18

DYSTOCIA - SMALL RUMINANTS L (1H) [424]

Students should be able to:

- explain the physiological birth process of small ruminants, the detection of possible deviations and their causes, as well as the carrying out of the obstetric examination and conservative obstetrics, and explain the indication, preparation and carrying out of surgical obstetrics

BIRTH AND PUERPERIUM L (1H)

Students should be able to:

- explain the significant processes during birth and the underlying control mechanisms,
- explain the processes that happen on the uterine, ovarian and pituitary level during the puerperium

DYSTOCIA - CATTLE 1 +2 L (2H) [425]

Students should be able to:

- explain the physiological birth process of cattle, the detection of possible deviations and their causes, as well as the carrying out of the obstetric examination and conservative obstetrics
- describe measures to treat dystocia and explain the indication, preparation and carrying out of surgical obstetrics

PUERPERIUM - RUMINANTS L (1H) [426]

Students should be able to:

- describe the course of the puerperium of cattle, sheep and goats and its disruptions and explain the possibilities of veterinary intervention

PUERPERIUM - HORSES L (1H) [427]

Students should be able to:

- describe the course of the equine puerperium and its disruptions and explain the possibilities of veterinary intervention

[424] 1.17, 1.18

[425] 1.17, 1.18

[426] 1.18

[427] 1.18

PUERPERIUM AND DISEASES OF THE TEATS - SWINE L (1H) [428]

Students should be able to:

- describe the physiological and anatomical characteristics of the puerperium of pigs and explain the pathogenesis of the diseases that are presented
- describe the diseases of the teats that are presented and explain the possibilities of veterinary intervention

GENERAL NEONATOLOGY L (2H) [429]

Students should be able to:

- describe the anatomical and physiological principles of the shift from intrauterine to extra uterine life and perform a neonate examination

NEONATOLOGY - SMALL ANIMALS L (1H) [430]

Students should be able to:

- describe the physiological and anatomical characteristics of neonatal pups and explain the pathogenesis of the diseases that are presented

NEONATAL FOALS L (4H) [431]

Students should be able to:

- explain the characteristics of the adaptation of newborn foals to the environment, and explain the primary care
- explain the aetiology of Neonatales Atemnotsyndrom, as well as its treatment and correlation with pre-maturity; Lebensschwächesyndrom and equine NMD
- describe the most common diseases of foals during their first days of life with regard to diagnostics, treatment and prognosis

NEONATAL PIGLET L (1H) [432]

Students should be able to:

- explain the diseases that are presented and explain the possibilities of veterinary intervention

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[428] 1.18

[429] 1.18

[430] 1.18

[431] 1.18, 1.21

[432] 1.18

NEONATAL CALF I + II L (3H) [433]

Students should be able to:

- explain the adaptation of the newborn calf to the environment and describe primary care and the diseases of the umbilicus with regard to aetiology, diagnostics, treatment and prognosis
- describe frequent diseases of calves during the first days of life with regard to diagnostics, treatment and prognosis

NEONATAL LAMB L (2H) [434]

Students should be able to:

- describe the most frequent diseases of lambs during the first days of life with regard to diagnostics, treatment and prognosis

REPRODUCTION SPECIFIC ANIMAL SPECIES L (3H)

Students should be able to:

- describe the reproductive cycle, gestation and birth of the animal species discussed and explain the pathogenesis of the diseases that are presented

MOTHERLESS REARING L (1H)

Students should be able to:

- describe motherless rearing of pups and foals

DISEASES OF THE TEATS - SMALL ANIMALS L (2H) [435]

Students should be able to:

- describe the diseases in question (mammary tumour, mastitis, fibroadenomatosis) and explain the possibilities of veterinary intervention

DISEASES OF THE UDDER - HORSES L (1H) [436]

Students should be able to:

[433] 1.18, 1.21

[434] 1.18, 1.21

[435] 1.18, 1.21

[436] 1.18, 1.21

- explain the aetiology, diagnostics and treatment of mastitis in mares and describe further diseases of the udder

Diseases of Teats - Small Ruminants L (1h) [437]

Students should be able to:

- describe the diseases presented and explain the possibilities of veterinary intervention
- explain the pathogenesis of the diseases and develop a prevention plan from this knowledge

Mastitis - cattle L (2h) [438]

Students should be able to:

- explain the aetiology and the forms of mastitis, as well as their diagnostics

Application of antibiotics mastitis L (1h) [439]

Students should be able to:

- explain the target-oriented application of antibiotics in the treatment of mastitis with regard to effectivity, consequences for food regulation and practical application

Injuries of the teats - cattle L (1h) [440]

Students should be able to:

- differentially explain the aetiology and diagnostics of injuries of the teats and describe therapeutic measures, including surgical procedures

Miscellaneous

Clinical demonstrations S (14h) [441]

The content of the clinical demonstrations will refer to the patients currently treated in the clinics and thus are unknown in advance.

[437] 1.18, 1.21

[438] 1.21

[439] 1.10, 1.18

[440] 1.18, 1.21

[441] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

ANIMAL BREEDING LEGISLATION (CROSS SECTIONAL SUBJECT) (1H)[442]

Students should be able to:

- describe the current EU legislation for the health surveillance and for the running of a semen collection centre and explain the duties of the veterinarian when monitoring a semen collection centre

LIVESTOCK MANAGEMENT

Summary:

The students will get to know the basic principles livestock management of agricultural livestock (pigs, cattle, small ruminants) and horses. Major emphasis will be placed on the training of the students in systemic thinking, in the sense of integrated supervision and the classification of veterinary measures into process chains. Diseases will be discussed with regard to their economic relevance and their prevention on stock level.

Courses in detail:

Clinic for Reproduction (Wehrend et al.)

APPROACHES REGARDING LIVESTOCK SUFFERING FROM FERTILITY DISORDERS L (3H) [443]

Students should be able to:

- explain how to approach the problems in question that occur in the livestock and explain the basic principles of the respective preventative measures
- explain the following leading symptoms of the livestock, “repeated cycles”, “deficient rutting severity” and “high incidence of placenta retentions”

HORMONAL PROGRAMMES - CATTLE L (1H) [444]

Students should be able to:

- explain the hormonal programmes in question

[442] 1.1

[443] 1.1, 1.21, 1.36

[444] 1.18

SUPERVISION OF HORSE BREEDING FARMS L (1H) [445]

Students should be able to:

- explain the duties of the veterinarian concerning the different forms of the supervision of horse breeding farms

KEY PERFORMANCE INDICATORS OF FERTILITY - SWINE L (1H)

Students should be able to:

- explain and interpret the key performance indicators of fertility in question

KEY PERFORMANCE INDICATORS OF FERTILITY - CATTLE L (1H)

Students should be able to:

- explain and interpret the key performance indicators of fertility in question

THE PROBLEM OF MASTITIS IN LIVESTOCK L (2H) [446]

Students should be able to:

- explain the causes that may lead to inadequate health conditions of the udders in herds and the respective measures to prevent diseases of the udder

Clinic for birds, reptiles, amphibians and fish (Lierz et al.)

LIVESTOCK MANAGEMENT - POULTRY L (3H) [447]

Students should be able to:

- reproduce the organisation, including different husbandry systems, of poultry
- explain the tasks of a veterinarian in the livestock management of poultry
- reproduce the most important causes of performance losses caused by poultry husbandry
- interpret key performance data of a flock
- explain the diagnostic procedure and immunoprophylaxis in case of livestock problems

[445] 1.1, 1.3

[446] 1.1, 1.36

[447] 1.1, 1.3, 1.18, 1.21, 1.24, 1.36

Clinic for Ruminants (Internal Medicine and Surgery) (Sickinger et al.)

LIVESTOCK MANAGEMENT OF CATTLE L (5H) [448]

Students should be able to:

- list the production processes in the fields of dairy farming, suckling cow husbandry and bull fattening
- describe the disease complexes that occur in the individual husbandry and production forms, age groups and levels of efficiency
- describe diagnostic methods for their early detection on livestock level
- point out appropriate concepts for prophylaxis and treatment

Clinic for Pigs (Internal and Surgery) (Reiner et al.)

LIVESTOCK MANAGEMENT - PIG L (4H) [449]

Students should be able to:

- name and classify the elements of livestock management in pigs
- explain and apply the diagnostic procedure in the context of livestock inspections
- understand and apply measures of livestock health
- identify the main livestock diseases and problems
- identify and evaluate ways to improve animal welfare, consumer protection and production efficiency
- evaluate the economic relevance of livestock problems

Unit for Biomathematics and Data Processing (Büttner)

EPIDEMIOLOGY IN LIVESTOCK MANAGEMENT L (2H) [450]

Students should be able to:

- explain epidemiological measures, e.g. forms of prevalence, incidence, key figures of diagnostic tests
- carry out case number estimation considerations
- explain the use of statistical methods in livestock management

[448] 1.1, 1.3, 1.18, 1.21, 1.24, 1.36

[449] 1.1, 1.3, 1.18, 1.21, 1.24, 1.36

[450] 1.21

Miscellaneous

CLINICAL DEMONSTRATIONS S (4H) [451]

The content of the clinical demonstrations will refer to the patients currently treated in the clinics and thus are unknown in advance.

FUNDAMENTALS OF LIVESTOCK MANAGEMENT (CROSS SECTIONAL SUBJECT) (2H) [452]

Students should be able to:

- name and classify the elements of livestock management
- explain and apply the diagnostic procedure in the context of livestock inspections
- understand and apply measures of livestock health
- identify the main livestock diseases and problems
- identify and evaluate ways to improve animal welfare, consumer protection and production efficiency
- evaluate the economic relevance of livestock problems

REGULAR COURSES

FORENSIC VETERINARY MEDICINE, PROFESSIONAL AND ETHICAL LAW [453]

Coordinator
Fey

Instructors:
Roscher, Tacke, Adolphsen, et al.

Type of course:
lecture (1 CHW)

ECTS:
1

[451] 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.28

[452] 1.1, 1.3, 1.18, 1.21, 1.24, 1.36

[453] 1.1, 1.2, 1.7

Introduction:

- knowledge of the law of obligation and its impact on purchase law
- requirements of due diligence of the veterinarian
- issues of liability that are important for the veterinary practice
- aspects of penal law that may be of importance for the veterinary practice

Overall aims and objectives:

Students should be able to:

- reproduce the rules on the law of sales laid down in the Civil Code
- explain the legal differences between sales to end consumers and sales to others
- name the rules for warranty periods for different sales contracts
- name the rules for warranty periods for service contracts
- apply their knowledge of those articles that regulate the law of obligation, in particular its impact on purchase law, in case studies
- list the general and specific requirements of due diligence of the veterinarian and describe the consequences in the case of a breach of these requirements
- enumerate issues of liability that are important for the veterinary practice and know ways to financially safeguard themselves against possible risks
- explain aspects of penal law that may be of importance for the veterinary practice

Reading list:

- Althaus J., Ries, H.P., Schnieder K.-H.,Großbölting, R. (Hrsg.): Praxishandbuch Tierarztrecht. Schlütersche Verlagsgesellschaft 2006, 1. Auflage (2006), ISBN-13: 978-3899930207
- Brennecke D., Münow, F.: Existenzgründung kompakt. Veterinärspiegel Verlag 2008, ISBN: 978-3-86542-012-1

Electronic sources:

see StudIP:

https://studip.uni-giessen.de

Assessment:

a written examination (MCQ) within the framework of the Veterinary Medical Examination in “Forensic veterinary medicine, professional and ethical law” after the eighth semester

Husbandry And Diseases Of Ornamental And Farmed Fish And Reptiles/ Amphibians [454]

Coordinator:
Lierz

Instructors:
Flamm, Möller

Type of course:
lecture (1 CHW)

ECTS:
1

Introduction:
Farmed and ornamental fish:
The most important parasitic, bacterial and viral infectious diseases that occur in ornamental and farmed fish will be explained. The aetiology, pathogenesis, epidemiology, clinic, pathology, diagnosis and treatment as well as the prophylaxis will be discussed.

Reptiles / amphibians:
The most important viral, bacterial, mycological and parasitic infectious diseases for reptiles and amphibians as well as important husbandry and management-related diseases are discussed with regard to aetiology, epidemiology, pathogenesis, clinic, pathology, diagnostics, therapy and prophylaxis. Aspects of analgesia and anaesthesia as well as surgery in reptiles and amphibians are also explained in more detail in this context.

Overall aims and objectives:
Farmed /ornamental fish:
Students should be able to:

- describe the most important infectious diseases of ornamental and farmed fish and classify the respective importance of an outbreak of A disease for the individual animal and the stock
- describe the clinics and pathology of these infectious diseases and distinguish between them
- give direct and indirect detection methods that are appropriate for the respective pathogens and interpret the results of the examination
- assess whether, and if so, which therapeutics are suitable for the treatment of the different infectious diseases

[454] 1.1, 1.18, 1.21, 1.23, 1.24, 1.29, 1.30, 1.31, 1.33

- define and explain the possibilities of prophylaxis for the different infectious diseases.
- explain anaesthesia and the most important minor surgical procedures on fish

Reptiles / Amphibians:
Students should be able to:

- describe the most important infectious diseases of reptiles and amphibians and classify the according to importance of an outbreak of the disease for the individual animal and the stock
- describe the clinics and pathology of these infectious diseases and distinguish between them
- give direct and indirect detection methods that are appropriate for the respective pathogens and interpret the results of the examination
- assess whether, and if so, which therapeutics are suitable for the treatment of the different infectious diseases
- define and explain the possibilities of prophylaxis for the different infectious diseases

Reading list:

- „FISH DISEASE“: Diagnosis and Treatment, Edward J. Noga, Mosby-Year Book, Inc., 367 S., ISBN 8138 2558 X, 2. Auflage, erschienen 2000
- BSAVA Manuel of Ornamental Fish, von William H. Wildgoose, 304 S., 2. Auflage, erschienen bei Blackwell Pub Professional, ISBN: 978-0-905214-57-3
- Mader, Reptile Medicine and Surgery, W.b. Saunders Company Jun 2007, ISBN-13: 9781416053910
- Scheller und Pantchev: Parasitologie bei Schlangen, Echsen und Schildkröten, Chimaira 2008, ISBN-13: 978-3-89973-472-0
- R. Riehl und H. Baensch, „Aquarien Atlas“, Mergus Verlag (verschiedene Bände), z.B. 15. Auflage: (2006), ISBN-13: 978- 3882442274
- „Fischkrankheiten“, Rudolf W. Hoffmann, Verlag Eugen Ulmer
- Sandra Lechleiter und Dirk Willem Kleingeld, „Krankheiten der Koi und anderer Gartenteichfische“, Verlag: Ulmer (Eugen); 3.aktualisierte und erweiterte Auflage (2005), ISBN-13: 978-3800174980

Assessment:
an oral exam within the framework of the Veterinary Medical Examination in “Poultry diseases” in the eleventh semester

Diseases Of Pet Birds, Wildfowl And Poultry [455]

Coordinator:
Lierz

Instructors:
Lierz, Möller

Type of course:
lecture (1 CHW)

ECTS:
1

Introduction:
Infectious diseases are of particular relevance to poultry, but also pet birds and wildfowl populations. The following aspects will be discussed: etiology, pathogenesis, epidemiology, clinic, pathology, diagnostics and treatment with particular attention being paid to the prophylaxis of viral, bacterial, mycotic and parasitic diseases. Additionally, common postural and management-related diseases are discussed.

Overall aims and objectives:
Students should be able to:

- list the most important infectious diseases of pet birds, wildfowl and poultry and assess the relevance of an outbreak of disease for the individual animal, the stock, the population as well as for humans
- describe the clinics and pathology of these infectious diseases and define them
- name direct and indirect methods of detection for the respective pathogens and interpret the results of the examination
- decide whether, and if so which, therapeutic methods are suitable for the treatment of the different infectious diseases
- define and explain the possibilities of general and specific prophylaxis, in particular in the form of vaccinations, for the different infectious diseases
- describe and explain the most important surgical interventions concerning pet birds,
- describe the causes of behavioural disorders in parrots
- describe the functioning of the poultry industry and the different ways of keeping poultry

[455] 1.1, 1.18, 1.21, 1.23, 1.24, 1.29, 1.30, 1.31, 1.33

- decide whether or which therapeutic measures are suitable for the treatment of the different infectious diseases and define and explain the possibilities of general and special prophylaxis, especially by vaccination, for the different infectious diseases
- name the most important diseases caused by husbandry and management, recognise, describe and differentiate their clinical and pathological picture, and name therapeutic and prophylactic measures

Reading list:

- Siegmann, Neumann: Kompendium der Geflügelkrankheiten, Verlag: Schlütersche, 6. aktualisierte und erweiterte Auflage (2005), ISBN-13: 978-3877067444
- Kaleta, Krautwald-Junghanns: Kompendium der Ziervogelkrankheiten, Verlag: Schlütersche, 3. überarbeitete Auflage (2007), ISBN-13: 9783899930221
- Pees: Leitsymptome bei Papageien und Sittichen, Verlag: Enke, 1. Auflage, ISBN: 3-8304-1023-9
- Chitty und Lierz: BSAVA Manual of Raptors, Pigeons and Passerine Birds, BSAVA
- Company, ISBN: 978-1-905319046

Electronic sources:

see StudIP:
https://studip.uni-giessen.de

Self-assessment:

See questionnaire (available at the Office of the Clinic for Bird, Reptile, Amphibian and Fish Medicine)

Assessment:

an oral exam within the framework of the Veterinary Medical Examination in “Poultry diseases” in the eleventh semester

SEMINAR FUNCTIONAL PATHOLOGY [456]

Coordinator:

Herden

Instructors:

Employees of the Klinikum, Henrich, Herden, Köhler, Hirz

[456] 1.21, 1.24, 1.33

Type of course:
seminar (1 CHW)

ECTS:
1

Requirements:
Students must have attended the lecture on “General Pathology”, the seminar on “General Pathology” and the seminar on “Specific Pathology”.

Introduction:
Case analysis as an integrated course with the participation of clinical or paraclinical facilities. The students will discuss a clinical case, including its history and symptoms, clinical and laboratory diagnostic findings, its development and patho-morphological alterations. Further topics of discussion will be the differential diagnoses, the aetiology and pathogenesis of the disease and the final epicritic assessment.

Overall aims and objectives:
Students should be able to:

- discuss a clinical case and assign the symptoms to the clinical, patho-morphological and laboratory diagnostic findings

Reading list:
- Dahme/Weiss: Grundriss der speziellen pathologischen Anatomie der Haustiere, Verlag: Enke; 6. völlig neu bearb. Auflage (2007), ISBN-13: 978-3830410485
- McGavin/Zachary: Pathologic Basis of Veterinary Disease, Verlag: Mosby; 4th ed.
- (2006), ISBN-13: 978-0323028707
- respectively the translated version: Pathologie der Haustiere: Allgemeine, spezielle und funktionelle Veterinärpathologie- mit Zugang zum Elsevier-Portal, Verlag: Elsevier, München (2009), ISBN-13: 978-3437582509 A

Electronic sources:
see StudIP:
https://studip.uni-giessen.de
The documents required will be available on StudIP.

Assessment:
an oral and a practical examination within the framework of the Veterinary Medical Examination in “General pathology and specific pathological anatomy and histology” in the eleventh semester

HISTOPATHOLOGY-PATHOLOGICAL-HISTOLOGICAL COURSE [457]

Coordinator:
Herden

Instructors:
Henrich, Herden, Köhler, Hirz

Type of course:
practical (2 CHW)

ECTS:
3

Requirements:
Students must have attended the lecture on “General pathology”, the seminar on “General pathology” and the seminar on “Specific pathology”.

Introduction:
- an explanation of the methods, options and limitations of histopathology
- a discussion of selected histopathological specimens
- an explanation of aetiology and pathogenesis based upon the histomorphological alterations
- a discussion of possible differential diagnoses

Among others, the following topics / specimens will be discussed: the histopathology of inflammation, the alterations of the cardiovascular system, the lungs, the digestive system, the urinary and sexual organs, the locomotor system, the skin and nervous tissue, as well the histopathology of selected neoplasia.

Overall aims and objectives:
Students should be able to:
- identify histological specimens
- describe and explain the alterations
- make histopathological diagnoses and discuss possible differential diagnoses

A detailed list of specimens is accessible via StudIP.

[457] 1.21, 1.24, 1.28, 1.33

Reading list:

- Dahme/Weiss: Grundriss der speziellen pathologischen Anatomie der Haustiere, Verlag: Enke; 6. völlig neu bearb. Auflage (2007), ISBN-13: 978-3830410485
- Baumgärtner: Pathohistologie für die Tiermedizin, Verlag: Enke; 1. Auflage (2007), ISBN-13: 978-38304105464

Electronic sources:

see StudIP:
https://studip.uni-giessen.de

Scripts:

script provided by the student representatives

Learning recommendations:

Students are advised to improve their histological basic knowledge of the organs and tissues, to examine the specimens during the course, to compare them with the script and text books and complete them. All further questions should be directed at the instructor.

Assessment:

an oral and a practical examination within the framework of the Veterinary Medical Examination in "General and Specific pathology, pathological anatomy and histology" in the eleventh semester

FOOD SCIENCE [458]

Coordinator:

Kehrenberg

Instructors:

Kehrenberg, Zens, scientific staff

Type of course:

lecture (4 CHW)

ECTS:

4

Introduction:

The lecture (a total of 56 hours) will serve to:

[458] 1.3, 1.10, 1.21, 1.24, 1.35

- increase the students' knowledge within the topic of food hygiene in the field of food production (products of animal origin) and its placing on the market
- impart knowledge of the duties of the official veterinarian in the field of food hygiene
- impart knowledge of the legal rules and regulations, respectively the official inspections as well as the placing on the market of foods of animal origin

Overall aims and objectives:

Students should be able to:

- give an overview of the expertise in food of animal origin (meat products including poultry, as well as eggs, fish, crustaceans and molluscs, mussels and honey)
- give an overview of the horizontal and vertical legal regulations on a national and European level
- explain classic and modern methods of product manufacturing (including novel/functional food and GMO) and explain the legal requirements
- point out the criteria of preservability of foods of animal origin
- describe the possible negative influences (including microbiology, residues and storage pests) and the legal assessment
- discuss specific micro-organisms with regard to risks for human health
- convey the legal principles and requirements with regard to food supervision and control
- explain the legal principles and requirements regarding their placing on the market (including specific forms of marketing) of products

Reading list:

- K. Fehlhaber, J. Kleer, F. Kley (Hrsg.): Handbuch Lebensmittelhygiene (2007), Behr's Verlag,
- Horizontal and vertical regulations of the Foodstuff Hygiene Ordinance.

Electronic sources:

Homepage of the Department of Veterinary Food Science (IFTN)
https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/nahrungsmittelkunde/institut/studium
Stud.IP JLU Giessen
https://studip.uni-giessen.de

Scripts:

"Handouts / Downloads" for each lecture block are available on the homepage of the IFTN; scripts on food inspection and technology on the homepage of the IFTN.

Self-assessment:

questions on the homepage of the IFTN

Learning recommendations:

- preparation and revision of the respective handouts
- in-depth reading of the relevant scripts / literature

Assessment:

an oral and a practical examination within the framework of the Veterinary Medical Examination in “Food science, including food hygiene "in the eleventh semester

FOOD EXAMINATION AND TECHNOLOGY (“FOOD PRACTICAL”) [459]

Coordinator:

Kehrenberg

Instructors:

Kehrenberg, Zens (+ assistants)

Type of course:

practical (2 CHW)

ECTS:

3

Introduction:

The practical will serve to:

- demonstrate meat production
- demonstrate the official food examination including a legal assessment of the hygienic condition
- carry out a general and specific inspections
- complete a food inspection report

Overall aims and objectives:

Students should be able to:

- explain the legal principles and requirements of official food inspections
- develop, under guidance, the independent practical implementation of the official food examination (incl. sensory, bacteriological, histological and chemical-physical examinations)
- carry out independently (while under supervision) the practical official inspection of food (including the sensory, bacteriological, histological and chemical-physical inspection)

[459] 1.3, 1.10, 1.21, 1.28, 1.35

- complete a report within the framework of the legislation of the official food inspection
- give a practical outline of product manufacturing (the group of raw, broiled- and
- cooked sausages)

Reading list:

- K. Fehlhaber, J. Kleer, F. Kley (Hrsg.): Handbuch Lebensmittelhygiene (2007), Behr‘s Verlag,
- Horizontal and vertical regulations the Foodstuff Hygiene Ordinance

Electronic sources:

Homepage of the Institute of Veterinary Food Science (IFTN)
https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/nahrungsmittelkunde/institut/studium
Stud.IP JLU Giessen
https://studip.uni-giessen.de

Scripts:

“Handouts / downloads” for each lecture block are available on the homepage of the IFTN
Scripts on food inspection and technology on the homepage of the IFTN.

Self-assessment:

questions on the homepage of the IFTN

Learning recommendations:

- preparation and revision of the respective topic
- in-depth reading of the relevant scripts /literature

Assessment:

an oral and a practical examination within the framework of the Veterinary Medical Examination in “Food Science, including food hygiene” in the eleventh semester

PATHOLOGICAL-ANATOMICAL DEMONSTRATIONS [460]

Coordinator:

Herden

Instructors:

Herden, Köhler, Henrich, Hirz

[460] 1.24, 1.28, 1.33

Type of course:
one hour practical and one hour seminar per week, every two weeks in 2 alternating groups over the period of 2 semesters

ECTS:
1.5

Requirements:
Students must have attended the lecture and the seminar on “General pathology”.

Introduction:
The participants of the course will work with material taken from routine autopsies of the institute, archived materials and material of slaughtered animals. The alterations in organs will be discussed in groups with an assistant present. The pathological-anatomical and differential diagnoses will be collected and discussed. Each case will be discussed epicritically, referring to its possible etiologies, pathogenesis and clinical relevance.

Overall aims and objectives:
Students should be able to:

- Produce a forensically applicable organ report. This will include a complete description of the alterations in the organs, the formulation of the pathological-anatomical diagnoses, the differential diagnoses and the epicrisis.

Reading list:
- Dahme/Weiss: Grundriss der speziellen pathologischen Anatomie der Haustiere, Verlag: Enke; 6. völlig neu bearb. Auflage (2007), ISBN-13: 978-3830410485
- McGavin/Zachary: Pathologic Basis of Veterinary Disease, Verlag: Mosby; 4th ed.
- (2006), ISBN-13: 978-0323028707
- respectively the translated version: Pathologie der Haustiere: Allgemeine, spezielle und funktionelle Veterinärpathologie- mit Zugang zum Elsevier-Portal, Verlag: Elsevier, München (2009), ISBN-13: 978-3437582509 A

Electronic sources:
see StudIP:
https://studip.uni-giessen.de

Assessment:
a final discussion / attestation after the eighth semester, and an oral and a practical examination within the framework of the Veterinary Medical Examination in “General pathology and specific pathological anatomy and histology“ in the eleventh semester

SEMINAR SPECIFIC PATHOLOGY [461]

Coordinator
Herden

Instructors:
Herden, Köhler, Henrich, Hirz

Type of course:
seminar (1 CHW)

ECTS:
1

Requirements:
Students must have attended the lecture on “General pathology” and the seminar on “General pathology”.

Introduction:
Important aspects of essential fields of specific pathology will be dealt with in discourse.
The topics will be announced at the beginning of semester and are available at StudIP. Students are going to prepare the respective topics individually. During the seminar, questions and problems will be debated and discussed on the basis of visual material that will be presented.
Among others, the following topics will be discussed: sampling in sections, biopsy, leucosis, skin tumours, differential diagnostics of encephalitis, metabolic bone diseases, classification and forms of pneumonia, the infection with the porcine circo virus, pericarditis and endocarditis, mammary tumours, FIP, erysipelas, swine fever, differential diagnostics of stomatitis, differential diagnostics of changes in equine colic, parvovirus.
The current list of the topics of the seminar will be available at StudIP for all participants of the seminar.

Overall aims and objectives:
Students should be able to:

- comprehensively discuss and explain the topics that were dealt with

Reading list:

- Dahme/Weiss: Grundriss der speziellen pathologischen Anatomie der Haustiere, Verlag: Enke; 6. völlig neu bearb. Auflage (2007), ISBN-13: 978-3830410485
- McGavin/Zachary: Pathologic Basis of Veterinary Disease, Verlag: Mosby; 4th ed.

[461] 1.21, 1.24, 1.33

- (2006), ISBN-13: 978-0323028707
- respectively the translated version: Pathologie der Haustiere: Allgemeine, spezielle und funktionelle Veterinärpathologie- mit Zugang zum Elsevier-Portal, Verlag: Elsevier, München (2009), ISBN-13: 978-3437582509 A

Electronic sources:

information and material for the course will be available at StudIP:
https://studip.uni-giessen.de

Learning recommendations:

a preparation of the topics before the respective seminar

Assessment:

a final exam at the end of the semester, an oral and a practical examination within the framework of the Veterinary Medical Examination in "General and Specific Pathology, Pathological Anatomy and Histology" in the eleventh semester

COMBATING EPIZOOTIC DISEASES AND INFECTIOUS DISEASE EPIDEMIOLOGY [462]

Coordinator:

Bauerfeind

Instructors:

Bauerfeind, Eisenberg, Ewers, Heydel, König, Menge, Weber, Lamp

Type of course:

lecture (3 CHW)

ECTS:

3

Requirements:

Students must have attended the courses in: "Bacteriology and Mycology",
"Virology" and "Parasitology" in 4th and 5th semesters.

Introduction:

This course will deal with the relevance, the objectives, strategies and methods, the organisation and the legal foundations in Germany. Major emphasis will be placed on the structure and function of the official institutions that are involved in animal disease control and

[462] 1.1, 1.3, 1.10, 1.18, 1.21, 1.24, 1.29, 1.36

those institutions they cooperate with; the German and European Animal Health Laws; as well as the regulations concerning the processing of by-products of animal origin. The general part of the lecture will mainly deal with aspects of epidemics and hygiene concerning animal husbandry; the application of animal vaccines; and the national, intra-community and EU cross-border transport of goods, animals and pathogens. The specific part will specifically centre on the strategies and protective measures for the combating of individual epizootics in Germany. In order to understand national proportions, EU regulations and other international regulations will be taken into account.

Overall aims and objectives:

Students should be able to:

- name and explain the objectives, strategies and methods of the national animal disease control
- list epizootics and diseases of animals that are subject to reporting and risk assess with regard to the risk of exposition
- explain the processes of epizootic legislation
- list the institutions that are concerned with the control of epizootics and define their respective areas of responsibilities
- explain the relevant animal health legislations (Animal Diseases Act, animal transport-regulation, vaccine-regulation etc) and explain their aims and content
- explain the Federal Ordinances issued for the control of specific epizootics and explain their aims and content
- apply animal health regulations on specific questions (e.g. animal transports, the disposal of animal cadavers, application of vaccines, outbreaks of epizootics)
- discuss and assess the advantages and disadvantages of measures of the epizootics legislation

Reading list:

- Geissler, Rojahn, Stein: Sammlung Tierseuchenrechtlicher Vorschriften. Verlag R. S. Schulz, München
- Bisping: Kompendium der Staatlichen Tierseuchenbekämpfung, Verlag: Hippokrates (1999), ISBN-13: 978-377731423

Electronic sources:

Relevant information on the following websites:

www.bmelv.de
www.bmg.bund.de
www.oie.int
www.vetion.de
http://eur-lex.europa.eu
www.fli.bund.de

Scripts:

Accredited participants can obtain current lecture notes (selection) from the internet platform Stud.IP. Older documents can be obtained from the students body of lecture notes.

https://studip.uni-giessen.de

Self-assessment:

A questionnaire is available on the homepage of the Institute of Animal Hygiene and Infectious Diseases.

https://www.uni-giessen.de/fbz/fb10/institute_klinikum/institute/ihit/lehre/fragenkataloge

Learning recommendations:

Students are advised to thoroughly re-read their lecture notes with the help of textbooks, legal documents and the questionnaire. A division of the work and joint meetings with fellow students can also be very helpful.

Assessment:

an oral examination (100%) within the framework of the Veterinary Medical Examination in “Combating Epizootic Diseases And Infectious Disease Epidemiology" after the eighth semester

9TH AND 10TH SEMESTER CLINICAL ROTATION

(Rotation places for exchange students are limited and can only be allocated by individual agreement and only in the intramural part)

During the clinical rotation, students acquire practical veterinary skills by spending 2 or 4 weeks each intramurally in the various departments of the university's veterinary clinic and additionally completing extramural internships in veterinary curative practice as well as at the veterinary office, slaughterhouse and hygiene control.

The intramural part of the clinical rotation is completed in groups of a maximum of 8 students, the organisation and allocation is carried out by the study coordination.

The extramural part is organised by the students independently, taking into account the requirements laid down in the TAppV.

INTRAMURAL	TIME IN WEEKS	ECTS
Block 1: Clinic for Horses - Surgery	2	4
Block 2: Clinic for Horses - Internal Medicine	2	4
Block 3-4: Clinic for Small Animals - Surgery	2	4
Block 5-6: Clinic for Small Animals - Internal Medicine	2	4
Block 7: Clinic for Birds, Reptiles, Amphibians and Fish	2	4
Block 8-9: Clinic for Obstetrics, Gynaecology and Andrology	4	8
Block 10: Clinic for Ruminants	2	4
Block 11: Clinic for Pigs	2	4
Block 12: Pathology and Bacteriology or Virology	1 1	2 2
EXTRAMURAL		
Block 13: Slaughterhouse internship	3	
Block 14: Public Veterinary Services	2	
Block 15: Hygiene control	2	
Block 16: Practice	16	

Information on Block 12:

Pathology and bacteriology/virology take place in rotation with each other. Every student completes pathology, but only some of the students complete virology, the other part spends the second week of the rotation block in bacteriology.

CLINIC FOR HORSES (SURGERY) 2 WEEKS [463]

Coordinator:

Prof. Dr. Michael Röcken

Instructors:

All veterinarians of the Clinic for equine surgery and orthopaedics

Course type:

Practical, practice

ECTS:

4

Prerequisites:

Successful completion of the 8th semester

Introduction:

During the clinical rotation, the knowledge acquired in the previous years is to be deepened and applied. Based on real cases, the students come to the clinic to train their veterinary skills and put what they have learned into practice. Furthermore, experience with many patients is gained and deepened.

Overall aims and objectives:

Students should be able to:

- ask general and, depending on the disease, specific points of anamnesis for common surgical and orthopaedic diseases in horses, ponies and donkeys
- implement the systematic approach of many surgical and orthopaedic examinations
- reproduce basic principles of the use of diagnostic as well as surgical instruments
- interpret the results of imaging procedures, especially endoscopic, sonographic and radiographic findings, in the field of equine surgery and orthopaedics

[463] 1.4, 1.6, 1.9, 1.11, 1.12, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.26, 1.28, 1.29, 1.30, 1.31, 1.32

- suggest further examinations in a reasonable sequence for common or important surgical and orthopaedic diseases of the horse
- work up cases, diagnose and explain therapeutic options
- suggest therapeutic options in a well-founded manner
- learn the basic skills of equine practice

Reading list:

- Auer und Stark; Equine Surgery
- Dietz, Handbuch Pferdepraxis

Assessment:

Development of a case report

CLINIC FOR HORSES, INTERNAL MEDICINE 2 WEEKS [464]

Coordinator:

Fey

Instructors:

Fey, Roscher et al.

Course type:

Practical exercises with repetition of theoretical backgrounds

ECTS:

4

Prerequisites:

Successful completion of the 8th semester

Overall aims and objectives:

Students should be able to:

- inquire general and, depending on the disease, specific points of anamnesis for common internal diseases in horses, ponies and donkeys
- perform general examination and specific clinical examination of organ systems in patients and summarise their examination results with regard to a tentative diagnosis
- suggest further examinations in a reasonable order for common or important internal diseases of the horse

[464] 1.4, 1.6, 1.9, 1.11, 1.12, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.26, 1.28, 1.29, 1.30, 1.31, 1.32

- name laboratory diagnostic tests of blood and other body fluids
- evaluate and explain in particular parameters of haematology, clinical chemistry, essential hormones and functional tests with regard to their diagnostic significance
- name the advantages and disadvantages of common diagnostic procedures for the detection of infectious or contagious diseases in horses
- interpret the results of imaging procedures, in particular endoscopic, sonographic and radiographic findings, in the field of equine internal medicine
- explain the clinical pictures including pathogenetic aspects of important infectious and non-infectious internal diseases as well as diseases of the skin in horses
- suggest therapeutic options in a well-founded manner
- explain the legal aspects of equine therapy
- explain and perform simple diagnostic and therapeutic activities on horses

Reading list:

- Handbuch Pferdepraxis, Thieme Verlag; Documents in StudIp

Assessment:

Ungraded trial exam on a clinic patient.

CLINIC FOR SMALL ANIMALS (SURGERY) 2 WEEKS [465]

Coordinator:

Kramer

Instructors:

Staff of the Clinic for Small Animal Surgery

Course type:

Internship

ECTS:

4

Prerequisites:

2nd part of the Veterinary Medical Examination

[465] 1.4, 1.6, 1.9, 1.11, 1.12, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.26, 1.28, 1.29, 1.30, 1.31, 1.32

Introduction:
Participation in all departments of small animal surgery (outpatient clinic, ward, operating theatre, radiology, anaesthesia).

Overall aims and objectives:
Students should be able to:

- present patients in the ward round
- prepare the patient and the surgeon to perform a surgery
- name the fundamentals of X-ray image assessment and preparation of an ultrasound
- make the preparations for anaesthesia and monitor it

Reading list:
- Chirurgie der Kleintiere, Fossum, 2009

Assessment:
Veterinary Medical Examination

CLINIC FOR SMALL ANIMALS (INTERNAL MEDICINE) 2 WEEKS [466]

Coordinator:
Prof. Dr. A. Moritz

Instructors:
Prof. Dr. Natali Bauer, Dr. Anna-Lena Proksch, Dr. Esther Haßdenteufel Prof. Dr. Matthias Schneider, Dr. Katarina Hazuchova, Prof. Dr. Nadine Passlack

Course type:
Practical exercise on the animal

ECTS:
4

Prerequisites:
Participation in the lectures of the 5th, 6th, 7th, 8th semester and successfully passed exams, according to StuPO.

[466] 1.4, 1.5, 1.6, 1.9, 1.11, 1.12, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.26, 1.28, 1.29, 1.30, 1.31, 1.32

Introduction:

Problem-oriented diagnostics in internal medicine and clinical laboratory diagnostics

Overall aims and objectives:

Students should be able to:

- work through a clinical case in a problem-oriented way
- create a problem list from the findings of the history and clinical examination
- prioritise the problem list according to importance
- list the differential diagnoses for the most important problems
- formulate an examination plan
- formulate an extended problem list based on the findings of the further examinations
- prioritise the extended problem list according to importance
- name the differential diagnoses for the most important extended problems
- make symptomatic and aetiological diagnoses
- create a management plan / treatment plan for the case
- name the prognosis.
- explain the pathophysiological relationships

Reading list:

- Lernmaterialien der Vorlesungen
- Klinik der Hundekrankheiten
- Praktikum der Hundeklinik
- Krankheiten der Katze
- Differentialdiagnosen Innere Medizin bei Hund und Katze

Assessment:

an oral exam 60%

CLINIC FOR BIRDS, REPTILES, AMPHIBIANS AND FISH 2 WEEKS [467]

Coordinator:

Prof. Dr. Michael Lierz

Instructors:

Franca Möller, Jessica Link, Bianca Bücking, Johannes Dusek

[467] 1.4, 1.6, 1.9, 1.11, 1.12, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.26, 1.28, 1.30, 1.31, 1.32, 1.33

Course type:
Practical

ECTS
4

Prerequisites
Special exams in the following subjects (§3 Para. 4 Study and Examination Regulations):
Animal Husbandry & Animal Hygiene; Animal Welfare & Ethology; Animal Nutrition; Clinical Propaedeutics; Virology; Bacteriology & Mycology; Parasitology; Animal Disease Control and Infectious Disease Epidemiology; Pharmacology & Toxicology; Pharmaceutical and Narcotics Law; Radiology; Forensic Veterinary Medicine; Professional and Ethical Law

Introduction:
The clinical rotation in the Clinic for Birds, Reptiles, Amphibians and Fish (KVRAF) includes observation, discussion, assistance (assisting) and supervised performance of examinations and treatments of polyclinic and inpatients (ornamental and wild birds, reptiles, amphibians and fish) as well as their emergency care. Several laboratory tests and pathological-anatomical examinations are also carried out and discussed. Furthermore, the students take part in field trips as part of the poultry health management.
Seminars/courses are offered on selected, important topics (dissection course, X-ray course and practical introduction to clinical microbiology).

Overall aims and objectives:
Students should be able to:

- make a targeted preliminary report on individual patients and livestock and to carry out clinical examinations of birds and reptiles as well as pathological-anatomical examinations of birds
- discuss differential diagnoses and the necessary examinations for further differentiation on the basis of the findings
- know the radiological anatomy of birds and assess radiographs
- provide professional first aid and appropriate feeding for wild birds found
- apply remedies and vaccines to birds and reptiles in a professional manner
- transfer internal and surgical knowledge acquired to concrete cases within the framework of case discussions
- assess poultry husbandry on the basis of legal and ethological principles
- initiate therapeutic measures in a poultry livestock, taking into account the legal framework conditions, and to discuss therapy-accompanying and prophylactic measures

.

Reading list:

Poultry:

- Rautenschlein, Ryll: Erkrankungen des Nutzgeflügels, Publisher: utb, 1st edition (2014), ISBN 978-3-8252-8568-5 oder e-Book: https://hds.hebis.de/ubgi/Record/HEB368953955
- Siegmann, Neumann: Kompendium der Geflügelkrankheiten, Publisher: Schlütersche, 7th edition (2012), ISBN-13: 978-3-89993-083-2,

Ornamental birds:

- Pees: Leitsymptome bei Papageien und Sittichen: diagnostischer Leitfaden und Therapie. Publisher: Enke, 2nd edition (2011), ISBN: 9783830410843
- Kaleta und Krautwald-Junghanns: Kompendium der Ziervogelkrankheiten, Publisher: Schlütersche, 4th edition (2011), ISBN: 978-3-89993-087-0.
- X-ray atlas: Krautwald-Junghanns et al: Atlas der bildgebenden Diagnostik bei Heimtieren. Publisher: Schlütersche, 1st edition 2009. ISBN: 978-3-89993-040-5

Reptiles:

- Mader: Reptile and Amphibian medicine and surgery. Publisher: Elsevier. 3. 2019 edition. ISBN: 978-0323482530
- Pees: Leitsymptome bei Reptilien: diagnostischer Leitfaden und Therapie. Publisher: Enke (2015), ISBN: 978-3-8304-1227-4 or e-Book: eISBN: 978-3-8304-1228-1

Assessment:

a presentation is given as proof of performance within the two-week rotation period.
an oral exam within the framework of the Veterinary Medical Examination "Poultry Diseases" (TAppV § 42)

CLINIC FOR OBSTETRICS, GYNAECOLOGY AND ANDROLOGY 4 WEEKS [468]

Coordinators:

Wehrend, Wrenzycki

Instructors:

Wehrend, Wrenzycki, Hospes, Schuler, NN

Course type:

Seminar, practical exercise, animal practice

[468] 1.4, 1.5, 1.6, 1.9, 1.11, 1.12, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.26, 1.28, 1.29, 1.30, 1.31, 1.32

ECTS:
8

Prerequisites:
Successful completion of the 8th semester

Introduction:
Repetition and deepening of reproductive biology and reproductive medicine correlations and transfer of knowledge to activities in practical reproductive medicine and the analysis of livestock problems.

Overall aims and objectives:
The students should be able to deepen their knowledge of veterinary reproductive medicine and livestock management and apply it to clinical cases. In this process, he/she should recognise any knowledge deficits and fill them. The aim is that a clinical case can be presented in free speech.

Reading list:
Lecture notes from the block Reproduction and Livestock Management

Assessment:
Accompanying oral knowledge tests on obstetrics and reproduction in dogs and horses, examination of a semen sample, writing a medical report with calculation of the costs incurred by the animal owner on the basis of the fee schedule for veterinarians (GOT).

CLINIC FOR RUMINANTS 2 WEEKS [469]

Coordinator:
PD Dr. Sickinger

Instructors:
PD Dr. Sickinger; Dr. Jörling, TÄ Jost, TÄ Kasper, Dr. Lang, TÄ Stahl

Course type:
Clinical training on animals (in the form of a seminar)

[469] 1.4, 1.6, 1.8, 1.9, 1.11, 1.12, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23, 1.24, 1.26, 1.28, 1.29, 1.30, 1.31, 1.32

ECTS:
4

Introduction:
The rotation is intended to give students the opportunity to deal with species-specific issues and diseases.

Overall aims and objectives:
During the rotation, students have the opportunity to gain experience in clinical examination, diagnostics and therapy including surgical measures (surgical assistance) on ruminants. Animal species covered are cattle, sheep, goats, new and old world camelids and wild ruminants.
Most important buiatric diseases are repeated and the learning content is to be applied on the patient under supervision.
Wherever possible, students will be involved in livestock visits as part of the animal health service.

Reading list:
- Lecture notes of the Clinic for Ruminants
- Dirksen, Gründer, Stöber (eds.): Innere Medizin und Chirurgie des Rindes

Assessment:
Veterinary Medical Examination, PB 5: Examination on the patient and theory part

CLINIC FOR PIGS 2 WEEKS [470]

Coordinator:
Reiner

Instructors:
Reiner, Becker, Kühling, Langbein, Mandler

Course type:
practical exercises

ECTS:
4

[470] 1.4, 1.6, 1.8, 1.9, 1.11, 1.12, 1.14, 1.15, 1.16, 1.17, 1.18, 1.20, 1.21, 1.22, 1.23, 1.24, 1.26, 1.28, 1.29, 1.30, 1.31, 1.32

Prerequisites:
Successful completion of the 8th semester

Overall aims and objectives:
Students should be able to:

- name and explain the essential aspects of hygiene in pig practice and in the pig herd
- describe the essential elements of anamnesis and herd inspection and establish connections with pig-specific diseases
- explain the special features of the selection and preparation of animals for clinical examination and post-mortem examination as well as of samples for further examinations and justify them from a technical and epidemiological-statistical point of view
- explain the interactions between husbandry factors and pathogens and their effects on the clinical picture, prognosis and prophylactic and therapeutic measures using examples
- name the special features and the position of pig medicine in comparison with other clinical branches of veterinary medicine
- think through, present and discuss a pig-specific livestock problem, taking into account history, livestock inspection, clinical examination, dissection results and further examinations, individually and in a team
- explain and carry out simple preparatory, diagnostic and therapeutic activities on pigs independently

Reading list:

- Reiner, Krankes Schwein-kranker Bestand, Ulmer

Assessment:
Ungraded exam at the end of the 2-week course; presentation of a livestock problem.

INSTITUTE FOR VETERINARY PATHOLOGY, 1 WEEK [471]

Coordinator:
Herden

Inspectors:
Herden, Köhler, Henrich

Course type:
Practical exercises

[471] 1.5, 1.6, 1.11, 1.14, 1.21, 1.24, 1.28, 1.33

ECTS:
2

Prerequisites:
Successful participation in the special pathology seminar, histopathology course, pathological-anatomical referrals

Introduction:
The rotation provides in-depth theoretical and practical training in general and special pathology based on selected dissection cases.

Overall aims and objectives:
Students should be able to:

- independently carry out dissection of domestic mammals following the autopsy instructions (species-specific dissection procedure)
- recognise and describe organ and tissue alterations
- make pathological-anatomical diagnoses and differential diagnoses
- write reports on findings including description of findings, pathological-anatomical diagnoses and differential diagnoses as well as epicritical evaluation of the case including the aetiological diagnoses and differential diagnoses
- carry out assessments of the morphological findings and findings on the cause of death in the clinical-anamnestic context
- deal with the hygiene and safety measures necessary in the dissection area and in the handling of potentially infectious material

Reading list:

- Baumgärtner, W., Gruber, A.D.: Allgemeine Pathologie für die Tiermedizin. 3rd ed., Thieme Verlag, 2020 (also available digitally at the Thieme-Vet-Center of the JLU)
- Baumgärtner, W.; Gruber, A.D.: Special Pathology for Veterinary Medicine. 2nd ed., Thieme Verlag, 2020 (also available digitally at the Thieme-Vet-Center of the JLU)
- Zachary, J.F.: Pathologic basis of veterinary disease. 6th ed., Mosby, 2016

Assessment:
Presentation of the examined cases and assessment of the findings reports

BACTERIOLOGY 1 WEEK [472]

Coordinator:
Ewers, Bauerfeind

Instructors:
Bauerfeind, Ewers, Heydel, Kerner, Lämmler, Prenger-Berninghoff, Pulss, Schmidt

Course type:
Practical and seminar

ECTS:
2

Prerequisites:
Participation in the course "Bacteriology and Mycology" (general and specific part); successful completion of the 2nd examination section of the Veterinary Medical Examination.

Introduction:
Teaching in bacteriology during the year of rotation serves to deepen the material taught in the 5th semester. For this purpose, the students are trained in dealing with pathogenic bacteria and fungi using authentic clinical sample material from diseased animals. In detail, they learn conventional and modern methods of laboratory diagnostics of bacterial and fungal diseases. Training focuses on microscopic, cultural, biochemical and serological examination methods.

Overall aims and objectives:
Students should be able to:

- carry out simple microbiological and serological working methods and evaluate examination results
- correctly carry out complex laboratory diagnostic tests and identify the pathogens of important microbially caused diseases in animals
- evaluate laboratory diagnostic findings with regard to diagnoses and therapy suggestions
- master hygienic safety measures in microbiological laboratory work and handle pathogenic microorganisms safely

[472] 1.8, 1.11, 1.21, 1.24, 1.28

Reading list:

- Selbitz, Truyen, Valentin-Weigand: Tiermedizinische Mikrobiologie, Infektions- und Seuchenlehre, Enke-Verlag, 10th, completely revised edition (2015), ISBN: 978-3830410805
- Quinn et al: Clinical Veterinary Microbiology; 2nd revised edition (2013); Mosby, St Louis, United States; ISBN-13: 9780723432371

Assessment:

an oral and written case presentation at the end of the week.

VIROLOGY 1 WEEK [473]

Coordinator:

Weber

Instructors:

Bank-Wolf, König, Schmid, Tekes, Weber

Course type:

Internship/Practical

ECTS:

2

Introduction:

Discussion on sample collection and sample shipment for virological laboratory diagnostics. Dealing with infectious agents and safe working in the laboratory. Carrying out virological test procedures (cell culture, virus cultivation, serum neutralisation test, immunofluorescence, PCR/ RT-PCR, plaque test, agar diffusion, electron microscopy, ELISA). Interpretation of the test results and evaluation of the aetiological significance.

Overall aims and objectives:

Students should be able to:

- explain criteria for taking and sending samples
- describe procedures of virological laboratory diagnostics and name the required sample materials
- assess the advantages and disadvantages as well as the suitability of virological laboratory tests in the context of clinical questions

[473] 1.11, 1.21, 1.24, 1.28

- interpret results of virological laboratory diagnostics and apply them to clinical cases

Reading list:

- Documentation virological course (internship microbiology and virology)
- Tiermedizinische Mikrobiologie, Infektions- und Seuchenlehre; Hans-Joachim Selbitz Uwe Truyen Peter Valentin-Weigand (eds.). 10th updated edition 2015 672 p., ISBN: 9783830412625

SKILLS LAB – ROTATION [474]

Coordinator:

Arnhold

Instructors:

Student tutors

Course type:

Practical (0,5 CHW)?

ECTS:

0,5

Introduction:

In the 9th and 10th semester exercise, various veterinary skills are taught using models and simulators.
Currently, the Skills Lab comprises 12 comprehensive learning stations.

Overall aims and objectives:

Students should be able to:

- prepare blood smears, stain with Diff-Quick and microscopy
- place a urinary catheter in the bitch
- carry out injection techniques and blood sampling in different animal species
- learn suturing and tying techniques
- intubate dogs and cats and place a nasal feeding tube
- demonstrate auscultation of the heart and lungs on a simulator and recognise physiological and pathological findings
- demonstrate cardiopulmonary resuscitation on a dog

[474] 1.4, 1.14, 1.15, 1.16, 1.17, 1.19, 1.21, 1.23, 1.29

- demonstrate restraints on different animal species on a model and learn how to handle them
- demonstrate dressing techniques on a small animal and horse leg
- wash, disinfect and dress sterilely in the context of preparation for surgery
- carry out the rectal examination on the horse and distinguish between physiological and pathological conditions.
- assess radiographs professionally and position patients correctly for optimal radiographs
- learn the simple use of ultrasound and endoscopes
- carry out artificial insemination on cattle
- learn veterinary communication with the animal owner on the basis of a pre-report survey

Reading list:

- Baumgartner, Walter, Klinische Propädeutik der Haus- und Heimtiere, Publisher: Parey Bei Mvs; 7th completely revised and expanded 9th edition (2018).
- Reiner G., Krankes Schwein – kranker Bestand, 2015
- Von Pückler, Kerstin, Röntgen Hund und Katze – Thorax und Abdomen, Verlage Thieme, 2018

Electronic learning materials:

see StudIP:
https://studip.uni-giessen.de/studip/

Learning recommendations:

Use the electronically provided teaching aids to prepare and follow up the exercise.

Assessment:

none

APPENDIX

LIST OF SUBJECTS AND DAY ONE COMPETENCES

(as approved by ECCVT on 17 January 2019)

Forewords

A. Competence is a concept that integrates knowledge, skills and attitudes. Competence requires acquisition of technical skills but further involves applying relevant knowledge, and having the confidence and ability to transfer what has been learnt to a variety of contexts.

B. In order to facilitate for educational establishments to meet the requirements of the overall basic veterinary competence that the EU has established it needs to be broken down to more specific "Day One Competences": Overall basic veterinary competence is currently laid down in different pieces of the EU legislation, namely:

- Directive 2005/36/EC amended by Directive 2013/55/EU (on the recognition of professional qualifications)
- Directive 2010/63/EU (on the protection of animals used for scientific purposes)
- Regulation 852/2004/EC (on the hygiene of foodstuffs)
- Regulation 853/2004/EC (on specific hygiene rules for food of animal origin)
- Regulation 854/2004/EC (on specific rules for the organisation of official controls on products of animal origin intended for human consumption)
- Regulation (EU) 2017/625 (on official controls)
- Regulation 1099/2009/EU (on the protection of animals at the time of killing) as amended by Regulation (EU) 2017/625
- Regulation (EU) 2016/429 (on transmissible animal diseases and amending and repealing certain acts in the area of animal health)
- Proposal on Regulation on veterinary medicinal products

C. Overall basic competence ought to encompass all references in the different pieces of the EU legislation to ensure consistency on the recognition of professional qualifications in European Union and beyond.

D. 'Day One Competences' is the minimum standard required and is the starting point for a variety of roles in the veterinary profession. After graduation, ongoing professional development will be needed in whichever field the new graduate decides to enter, and some roles may require postgraduate training and further formal qualifications (e.g. Diplomate of a European College, PhD).

E. A new graduate who has achieved Day One Competences should be capable to independently perform appropriate entry-level tasks and duties of the veterinary profession and confident enough to practise veterinary medicine at a primary care level on their own, while knowing when it is appropriate to seek direction from more experienced colleagues. New

graduates are likely to need more time to perform some procedures. Support and direction from more senior colleagues should be available.

F. Veterinary educational establishments are responsible for developing the Day One Competences of their students and ensuring that they have met the competences by the time they graduate. They are greatly assisted in this by the practising arm of the veterinary profession, which provides Extramural Practical Training so that students can practise applying these competences in the workplace.

G. These Day One Competences are in agreement with the above-mentioned EU Directives, Regulations and Proposals related to veterinary professional qualifications and the following references:

- OIE recommendations on the Competencies of graduating veterinarians ('Day 1 graduates') to assure National Veterinary Services of quality[1]
- European Commission: A working document on the development of a common education and training framework to fulfil the requirements under the Directive[2]
- FVE & EAEVE report on European Veterinary Education in Animal Welfare, Science, Ethics and Law[3]
- Standards and Guidelines for Quality Assurance in the European Higher Education Area (2015)[4]
- Final Recommendations of the 4th OIE Global Conference on Veterinary Education[5]
- One Health approach as recognised by WHO[6] and OIE[7]

http://www.oie.int/fileadmin/Home/eng/Support_to_OIE_Members/Vet_Edu_AHG/DAY_1/DAYONE-B-ang-vC.pdf
http://ec.europa.eu/environment/chemicals/lab_animals/pdf/guidance/education_training/en.pdf
http://www.carodog.eu/wp-content/uploads/2014/10/full_report_aw_curriculum_adopted3.pdf
http://www.enqa.eu/wp-content/uploads/2013/06/ESG_3edition-2.pdf
http://www.who.int/features/qa/one-health/en/
http://www.oie.int/en/for-the-media/onehealth/

DAY ONE COMPETENCES

1.1: Understand the ethical and legal responsibilities of the veterinarian in relation to animals under his/her care, the environment, clients, policies and society.

1.2: Demonstrate knowledge of the organisation, management and legislation related to a veterinary business economics and employment rights.

1.3: Promote, monitor and maintain health and safety in the veterinary setting; demonstrate knowledge of systems of quality assurance; apply principles of risk management to their practice.

1.4: Communicate effectively with clients, the public, professional colleagues and responsible authorities, using language appropriate to the audience concerned and in full respect of confidentiality and privacy.

1.5: Prepare accurate clinical and client records, and case reports when necessary, in a form satisfactory to colleagues and understandable by the public.

1.6: Work effectively as a member of a multi-disciplinary team in the delivery of services.

1.7: Understand the economic and emotional context in which the veterinary surgeon operates.

1.8: Be able to review and evaluate literature and presentations critically.

1.9: Understand and apply principles of clinical governance, and practise evidence-based veterinary medicine.

1.10: Use their professional capabilities to contribute to the advancement of veterinary knowledge and One Health concept, in order to improve animal health and welfare, the quality of animal care and veterinary public health.

1.11: Demonstrate ability to cope with incomplete information, deal with contingencies, and adapt to change.

1.12: Demonstrate that they recognise personal and professional limits, and know how to seek professional advice, assistance and support when necessary.

1.13: Demonstrate an ability of lifelong learning and a commitment to learning and professional development. This includes recording and reflecting on professional experience and taking measures to improve performance and competence.

1.14: Take part in self-audit and peer-group review processes in order to improve performance.

1.15: Obtain an accurate and relevant history of the individual animal or animal group, and its/their environment.

1.16: Handle and restrain animal patients safely and with respect of the animal and instruct others in helping the veterinarian perform these techniques.

1.17: Perform a complete clinical examination and demonstrate ability in clinical decision-making.

1.18: Develop appropriate treatment plans and administer treatment in the interests of the animals under their care with regard to the resources available.

1.19: Attend in an emergency and perform first aid in common animal species*.

1.20: Assess the physical condition, welfare and nutritional status of an animal or group of animals and advise the client on principles of husbandry and feeding.

1.21: Collect, preserve and transport samples, select appropriate diagnostic tests, interpret and understand the limitations of the test results.

1.22: Communicate clearly and collaborate with referral and diagnostic services, including providing an appropriate history.

1.23: Understand the contribution that imaging and other diagnostic techniques can make in achieving a diagnosis. Use basic imaging equipment and carry out an examination effectively as appropriate to the case, in accordance with good health and safety practice and current regulations.

1.24: Recognise signs of possible notifiable, reportable and zoonotic diseases as well as abuse and take appropriate action, including notifying the relevant authorities.

1.25: Access the appropriate sources of data on licensed medicines.

1.26: Prescribe and dispense medicines correctly and responsibly in accordance with legislation and latest guidance.

1.27: Report suspected adverse reactions through the appropriate channel.

1.28: Apply principles of bio-security correctly.

1.29: Perform aseptic procedures appropriately.

1.30: Safely perform sedation, and general and regional anaesthesia; implement chemical methods of restraint.

1.31: Assess and manage pain.
1.32: Recognise when euthanasia is appropriate and perform it with respect of the animal, using an appropriate method, whilst showing sensitivity to the feelings of owners and others, with due regard to the safety of those present; advise on disposal of the carcase.

1.33: Perform a systematic gross post-mortem examination, record observations, sample tissues, store and transport them.

1.34: Perform ante-mortem inspection of animals destined for the food-chain, including paying attention to welfare aspects; correctly identify conditions affecting the quality and safety of products of animal origin, to exclude those animals whose condition means their products are unsuitable for the food-chain.

1.35: Perform inspection of food and feed including post-mortem inspection of food producing animals and inspection in the field of related food technology.

1.36: Advise on, and implement, preventive and eradication programmes appropriate to the species and in line with accepted animal health, welfare and public health standards.