Course syllabus for

Laboratory Animal Science in Theory and Practice, 4.5 credits

Teoretisk och praktisk försöksdjursvetenskap, 4.5 hp
This course syllabus is valid from spring 2022.
Please note that the course syllabus is available in the following versions:
Spring2013 , Spring2016 , Spring2018 , Spring2019 , Spring2020 , Spring2021 , Spring2022 , Spring2025

Course code	4TX015
Course name	Laboratory Animal Science in Theory and Practice
Credits	4.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Toxicology
Level	AV - Second cycle
Grading scale	Fail (U), pass (G) or pass with distinction (VG)
Department	Comparative Medicine
Decided by	Programnämnd 7
Decision date	2012-11-07
Revised by	Education committee IMM
Last revision	2021-10-04
Course syllabus valid from	Spring 2022

Specific entry requirements

At least the grade Pass for the courses Principles of toxicology and Target organ toxicology - toxicokinetics and toxicodynamics.

Objectives

Upon completion of the course the student should be able to meet the defined learning outcomes as set out in the EU Education and Training Framework for people who undertake experimental minor procedures (EU modules 1-7) involving rodents and lagomorphs. Students will also achieve fundamental practical skills of minimally invasive procedures on mice (EU modules 3.2, 6.2 and 8) and rats (EU modules 3.2,), and initial knowledge on the design of animal experiments and good scientific practice in animal research (EU modules 9-11). At the end of the course the student should be able to:

Regarding knowledge and understanding

- describe key principles of EU and Swedish legislation regarding the use of animals in science,
- identify ethical and welfare issues in relation to the use of animals in scientific procedures, including basic principles of the 3Rs (replacement, reduction, refinement),
- explain basic principles of species-specific biology and husbandry, including anatomy, physiology, reproduction, nutrition, behavior, enrichment and genetics for rodents and lagomorphs,
- describe various aspects regarding species-specific animal health, care and management, including control of the environment, husbandry practices, diet, health status and disease for rodents and lagomorphs,
- identify behavioral species-specific signs of discomfort, pain, suffering and distress for rodents and lagomorphs,
- describe appropriate principles for and different methods of euthanasia for rodents and lagomorphs,

Regarding competence and skills

- handle and restrain mice and rats according to good practice,
- perform or simulate minor techniques, such as injections(dosing/blood sampling), on mice and rats,
- describe the skills required for humane killing of mice and rats,
- demonstrate an ethical, respectful and considerate attitude to research animals and their tissues.

Regarding judgement and approach

- discuss principles and concepts of experimental design of studies using laboratory animals,
- recognize good scientific practice in animal research.

Content

This course provides education and training in laboratory animal science for those who will need to undertake experimental procedures, with focus on rodents and lagomorphs, and provides initial training to those who will be involved in the design experimental procedures and analyse scientific literature and/or data that have been generated from studies involving animals.

Swedish legislation concerning scientific use of animals, ethical issues, species-specific basic biology, normal behavior of rodents and lagomorphs, handling, husbandry needs, and enrichment, signs of discomfort, pain and suffering in rodents and lagomorphs, different methodologies, the basis of disease control and how to implement hygiene in animal housing and experimental work will be covered.

The students will accomplish the practical part of the course within an animal laboratory setting where learning activities will take place. The activities include handling, restraining, dosing, blood-sampling and euthanasia in both simulators and in mice and rats.

Additionally, students will design a research protocol (project work) for an animal experiment with the structure of an ethical application.

More specifically, the course will cover:

- Legislation affecting animal research.
- Ethics, animal welfare and the 3Rs.
- Basic and appropriate biology of common rodents and lagomorphs used in research.
- Animal care, health and management of rodents and lagomorphs.
- Recognition of pain, suffering and distress of rodents and lagomorphs.
- Euthanasia of rodents and lagomorphs.
- Minimally invasive procedures without anaesthesia in rodents and lagomorphs.
- Design of scientific procedures and projects involving rodents and lagomorphs.

Teaching methods

The course has a blended learning approach using synchronous and asynchrounus education and training including web-based learning, which is combined and supported with live online and in-person seminars, interactive sessions, discussions, tutorials, and practical handling of mice and rats. In addition, group work focuses on a specific scientific project involving rodents and lagomorphs and is presented orally and discussed.

Examination

The examination consists of successful completion of the self-assessment in the web-based learning, the student's performance and attitude in practical sessions, oral presentation and a final written exam. The grade Pass with distinction is based on the final written exam.

Compulsory elements
Seminars, interactive sessions, discussions, practical sessions and oral presentations are compulsory. The examiner assesses if and, in that case, how absence can be compensated. Before the student has participated in all compulsory parts or compensated absence in accordance with the examiner's instructions, the student's results for respective part will not be registered. Absence from a compulsory activity may result in that the student cannot compensate the absence until the next time the course is given.

If there are special grounds, or a need for adaptation for a student with a disability, the examiner may decide to deviate from the syllabus's regulations on the examination form, the number of examination opportunities, the possibility of supplementation or exemptions from the compulsory section/s of the course etc. Content and learning outcomes as well as the level of expected skills, knowledge and abilities may not be changed, removed or reduced.

Other information
Education and training alone does not deliver competence to work with research animals. To be able to work with research animals, both education and training, and competence are a pre-requisite. This course provides education and training in laboratory animal science, which is a pre-requisite to start working under supervision. However, certification for working independently with animals can only be obtained after additional training and or supervision from and assessment by qualified animal facility personnel.

Transitional provisions

After each course occasion there will be at least six occasions for the examination within a 2-year period from the end of the course.

Other directives

The course language is English.

Course evaluation will be carried out in accordance with the guidelines established by the Board of Higher Education.

Literature and other teaching aids

Mandatory literature

E-learning material that is available on the course web.

Recommended literature

Handbook of laboratory animal science. : Essential principles and practices

Hau, Jann; Schapiro, Steven Jay

3. ed. : Boca Raton : CRC Press, cop. 2011 - 723 s.
ISBN:978-1-4200-8455-9 (vol.1) LIBRIS-ID:12096142

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