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 2025.
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	Pass with distinction, Pass, Fail
Department	Comparative Medicine
Decided by	Programnämnd 7
Decision date	2012-11-07
Revised by	Education committee IMM
Last revision	2024-10-08
Course syllabus valid from	Spring 2025

Specific entry requirements

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

Objectives

The aim of the course is to equip the student with knowledge and skills of ethical, legal and practical aspects of the use of laboratory animals in research.

Upon completion of the course, the student should meet the defined learning outcomes set out in the Swedish Legislation and the EU Education and Training Framework for people who undertake experimental minor procedures (EU modules 1-7) involving rodents. Students will also achieve basic insights into 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).

On completion of the course, the student should be able to:

Regarding knowledge and understanding

- describe key principles of Swedish Legislation and the EU directive regarding the use of animals in scientific studies
- identify ethical and welfare issues concerning the use of animals in scientific procedures, including basic principles of the 3Rs (replacement, reduction, refinement)
- describe basic principles in biology, anatomy, physiology, reproduction, nutrition, behavior, maintenance, enrichment and genetics for rodents
- describe the basic principles in the biology and the housing of other species used in laboratory animal science
- 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
- identify behavioral species-specific signs of discomfort, pain, suffering and distress for rodents
- describe appropriate principles for and different methods of euthanasia for rodents

Regarding competence and skills

- simulate minor techniques, such as injections (dosing/blood sampling), on 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 on rodents
- recognize good scientific practice in animal research

Content

The course provides education and theoretical training in laboratory animal science with a focus on rodents and provides basic knowledge in designing experimental studies and analyzing scientific literature and/or data that have been generated from studies involving animals.

The course contains web-based and on-site lectures on the requirements of Swedish legislation and the recommendations of the EU Directive and guidelines concerning the scientific use of animals, ethical issues, basic species-specific biology, the normal behavior of rodents, handling, breeding needs and enrichment, signs of discomfort, pain and suffering in rodents, the basis for disease control and how to manage hygiene in animal houses and experimental work.

The students will gain insight into animal handling in animal laboratory. The activity includes demonstrations of handling, dosing, blood sampling and euthanasia.

The Project work will be performed in groups in which the students will analyze ethical applications in relation to the 3Rs and will be presented orally.

No procedures will be performed on live animals.

Teaching methods

The course has a blended learning approach using synchronous and asynchronous education and training, including web-based learning, combined and supported with live online and in-person seminars, interactive sessions, discussions, and demonstrations of handling mice and rats. In addition, a project work is included focusing on a specific scientific project involving ethical applications, which are analyzed and presented orally and discussed by the students.

Examination

The examination consists of a passed result in the self-assessment in the web-based learning, the student's performance and attitude in practical parts, an oral presentation and a final written exam. The grade Passed with Distinction is based on the final exam.

Compulsory participation

Seminars, interactive sessions, discussions, practical sessions and oral presentations are mandatory. To receive a passing grade, attendance at compulsory teaching sessions is required.

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
The training does not provide competence to work with laboratory animals. Education, training, and competence are prerequisites to working with experimental animals. This course provides training in the theory of laboratory animal science. However, certification to work independently with animals can only be obtained after further training, practice and/or supervision and assessment by qualified laboratory animal personnel. Such certification is not included in this course.

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 is only available at the beginning of the course

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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