



**Karolinska
Institutet**

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 2019.

Please note that the course syllabus is available in the following versions:

[Spring2013](#) , [Spring2016](#) , [Spring2018](#) , [Spring2019](#) , [Spring2020](#) , [Spring2021](#) , [Spring2022](#)

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	2018-11-01
Course syllabus valid from	Spring 2019

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 or design experimental procedures involving rodents and lagomorphs, specifically EU modules 1 to 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,
- carry out minor procedures, such as injection, dosing, blood sampling, as well as euthanasia of mice and rats,

Regarding judgement and approach

- discuss principles and concepts of experimental design of studies in rodents or lagomorphs, and good scientific practice,
- demonstrate a respectful and considerate attitude to research animals and their tissues.

Content

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

The course contains web-based lectures on the requirements of 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.

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 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 web-based learning, which is combined and supported with 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 final grade (Fail/Pass/Pass with distinction) is determined by the student's combined performance in the written examination, in the practical sessions where skills and attitudes towards animals are assessed, and in the oral presentation and discussion of the group work.

Compulsory elements

All seminars, interactive sessions, discussions, tutorials, and practical sessions and oral presentations are compulsory.

The course director 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 course director's instructions, the student's results will not be registered in LADOK. Absence from a compulsory activity may result in that the student cannot compensate the absence until the next time the course is given.

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 supervision from and assessment by qualified animal facility personnel. This 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 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.

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