Course syllabus for

Bioethics and Laboratory Animal Science, 7.5 credits

Bioetik och försöksdjursvetenskap, 7.5 hp
This course syllabus is valid from spring 2025.
Please note that the course syllabus is available in the following versions:
Spring2022 , Spring2025

Course code	4BI115
Course name	Bioethics and Laboratory Animal Science
Credits	7.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Biomedicine
Level	AV - Second cycle
Grading scale	Pass with distinction, Pass, Fail
Department	Comparative Medicine
Decided by	Programme committee for study programmes in biomedicine
Decision date	2021-10-22
Revised by	Programme committee for study programmes in biomedicine
Last revision	2024-10-10
Course syllabus valid from	Spring 2025

Specific entry requirements

At least the grade G (pass) for the part "Biomedicine - Professional Skills" in the course Frontiers in Biomedicine within the Master's programme in Biomedicine.

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 and to develop the student's ability to reason in bioethical issues in general.

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 for scientific purposes
- identify ethical and welfare issues in relation to the use of animals in science, including basic principles of the 3Rs (replacement, reduction, refinement)
- describe basic principles of anatomy, physiology, reproduction, nutrition, behavior, husbandry, 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 of species-specific animal health, care and management, including control of the environment, husbandry practices, diet, health status and disease for rodents,
- identify behavioural species-specific signs of discomfort, pain, suffering, and distress for rodents,
- describe appropriate principles for and different methods of euthanasia for rodents,
- account for basic theories, principles, and concepts within biomedical ethics with relevance for biomedicine.

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.
- identify and perform an analysis of ethical problems, positions, and arguments within biomedicine,
- coherently argue for and against courses of action on how to deal with an ethical problem within biomedicine.

Regarding judgement and approach

- discuss principles and concepts of experimental design of studies on rodents,
- recognize good scientific practice in animal research in particular and in biomedicine in general,
- reflect on one's own and others' values and norms.

Content

The course is divided into the following parts:

Laboratory Animal Science, 4.5 hp

Grading scale: VU

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

It contains web-based and on-site lectures on the requirements of Swedish legislation and the recommendations of the EU Directive concerning the scientific use of animals, ethical issues, basic species-specific biology, 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 also gain an insight into animal handling in animal laboratory. Demonstration of handling, dosing, blood sampling and euthanasia will be performed.

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

No procedures will be performed on live animals.

Bioethics, 3.0 hp

Grading scale: VU

This part includes seminars with problem-based cases where a toolbox of bioethical concepts, principles and theories is introduced through a combination of readings and lectures. Individual bioethical reflections are written and discussed. Students identify value conflicts and ethical problems and coherently argue for and against them reflecting on their own and the others' values and norms.

Teaching methods

The course has a blended learning approach using synchronous and asynchronous education and training, including web-based learning, which is combined and supported with synchronous (live online and in-person seminars, interactive sessions, discussions, tutorials, and demonstrations of the handling of mice and rats. In addition, a project work is included where ethical applications are analysed, presented orally and discussed by the students in a group. In the Bioethics part, students prepare and participate in collaborative panel discussions on important bioethics topics.

Examination

Laboratory animal science (4.5 credits). The examination consists of the student's performance and attitude in the laboratory part, examination of the web-based learning, an oral group presentation and a final written exam. The grade Passed with distinction is based on the final exam.

Bioethics (3 credits). The examination consists of group presentations and individual discussion of selected bioethical topics.

To pass the whole course (grade of "Pass" or above), a grade of at least "Pass" must have been obtained for both parts of the course. To obtain a final grade of "Pass with distinction", a grade of "Pass with distinction" must be obtained for the Laboratory Animal Science part and Pass in the Bioethics part.

Compulsory participation
Seminars, interactive sessions, discussions, practical sessions and oral presentations are compulsory. The course examiner assesses if and, in that case, how absence from compulsory components can be compensated for. A student's study results cannot be finalised/registered until the student has participated in the compulsory components or compensated for their absence in accordance with the examiner's instructions. Absence from a compulsory component may mean that the student cannot compensate for absence until the next time the course is given.

Limitations of the number of examinations or practical training sessions:
Students who have not passed the regular examination are entitled to participate in five more examinations. If the student has failed six examinations/tests, no additional examination or new admission is provided.

The number of times that the student has participated in one and the same examination is regarded as an examination session. Submission of a blank examination is regarded as an examination. An examination for which the student registered but not participated in, will not be counted as an examination.

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 directives

The course language is English and examination is performed in English.

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

Oral evaluation in the form of course council meetings will be carried out during the course.

Literature and other teaching aids

Handbook of laboratory animal science : essential principles and practices.
Hau, Jann; Schapiro, Steven Jay

Fourth edition : Boca Raton : CRC Press, 2021 - xvii, 994 pages
ISBN:9781138341807 LIBRIS-ID:q4fr6tw6n4jrkkkh
Library search

Specific study material and reference articles will be provided during the course.