



**Karolinska
Institutet**

Course syllabus for

Bioethics and Laboratory Animal Science, 7.5 credits

Bioetik och försöksdjursvetenskap, 7.5 hp

This course syllabus is valid from spring 2022.

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	Fail (U), pass (G) or pass with distinction (VG)
Department	Comparative Medicine
Decided by	Programme committee for study programmes in biomedicine
Decision date	2021-10-22
Course syllabus valid from	Spring 2022

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 is to enable the student to deal with ethical, legal and optimal care and use of laboratory animals and to develop their capacity to reason in bioethical issues in general.

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

Regarding knowledge and understanding

- Identify and describe key legal principles of EU and Swedish ethical issues regarding the use of animals in science, including basic principles of the 3Rs (replacement, reduction, and refinement),
- explain basic principles of species-specific biology and husbandry, and describe various aspects regarding species-specific animal health, care and management for rodents and lagomorphs,
- identify behavioural species-specific signs of discomfort, pain, suffering, and distress and describe appropriate principles for and different methods of euthanasia for rodents and lagomorphs,
- account for basic theories, principles, and concepts within biomedical ethics with relevance for biomedicine.

Regarding competence and skills

- handle and restrain mice or rats according to good practice,
- perform or simulate minor techniques, such as injections (dosing/blood sampling), on mice or 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 using laboratory animals,
- recognize good scientific practice and an ethical and scientific approach in animal research in particular and to 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 contains web-based lectures on the requirements of Swedish legislation concerning scientific use of animals, ethical issues, species-specific basic biology, normal behaviour 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. This web-based part should be completed before presentation of project work.

The students will accomplish the practical part of the course within an animal laboratory setting where practical learning activities will take place. Additionally, students design a project involving animals that is delivered as an oral presentation (group work).

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 provides a blended learning approach using asynchronous web-based learning, combined and supported with synchronous (live online and in-person sessions), interactive activities, discussions, tutorials, and practical exercises, which include handling, restraining, dosing, blood-sampling and euthanasia in both simulators and in mice and rats. In addition, students work in groups on a specific scientific project involving laboratory animals, which is presented orally and discussed. Individually, students write a bioethics essay.

Examination

Laboratory animal science (4.5 credits). The examination consists of the student's performance and attitude in practical sessions, oral presentation, self-assessment in the web-based learning, and a final written exam. Graded Fail/Pass/Pass with distinction.

Bioethics (3 credits). The examination consists of a short bioethical essay where the student is required to present a coherent argument in favour or against a position in an important bioethical area. Graded Fail/Pass/Pass with distinction

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 both parts of the course.

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.