GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2025-2026

Laboratory Animal Science: Design and Ethics in Animal Experiments (I002873)

Course size *(nominal values; actual values may depend on programme)*

Credits 3.0 **Study time 84 h**

Course offerings in academic year 2025-2026

A (semester 2) English Gent

Lecturers in academic year 2025-2026

Kranenbarg-Stolte, Ellen	WAGENI01	lecturer-in-charge
Arts, Janneke	WAGENI01	co-lecturer
Bakker, Evert Jan	WAGENI01	co-lecturer
Bosch, Guido	WAGENI01	co-lecturer
Kranenbarg, Sander	WAGENI01	co-lecturer
Reimert, Inonge	WAGENI01	co-lecturer

Offered in the following programmes in 2025-2026	crdts	offering
International Master of Science in Health Management in Aquaculture	3	A

Teaching languages

English

Keywords

Position of the course

Contents

Legal framework
European directive 2010/63/EU provides the legal framework for the protection of animals used for scientific purposes. Article 23 of the directive recognizes the importance of education and training of all persons involved in using laboratory animals.

Paragraph 2 of article 23 of the EU directive states that “The staff shall be adequately educated and trained before they perform any of the following functions:
a) carrying out procedures on animals;
b) designing procedures and projects;
c) taking care of animals; or
d) killing animals.”
The current course provides a training programme dedicated to EU function (b), based on the required elements set out in Annex V of the EU directive, but further detailed in the associated guidance document (Caring for animals: aiming for better science, 2014).

The Dutch law on animal experiments aligns with the EU directive and states in article 9 that it is prohibited to conduct an animal experiment if the person organizing the experiment does have the adequate expertise (Dutch: deskundigheid) and competence (Dutch: bekwaamheid). The Dutch animal experiments decree (dierproevenbesluit 2014) further specifies the required expertise and competence in article 2:
“The person referred to in Article 9 of the law has been scientifically trained in a member state of the European Union or the European Economic Area in a field related to the activities to be carried out, possesses species-specific knowledge,

and has completed a course in laboratory animal science recognized by Our Minister."
The associated guidance document (dierproevenregeling 2014) stipulates (article 5) that the scientific training is to be an MSc degree in a relevant field, and provides (in appendix 6) the minimum requirements for the course in laboratory animal science. The minimum course requirements align with those in Annex V of the EU directive.
The current course is recognized by Our Minister as a course in laboratory animal science as stipulated in article 2 of the Dutch animal experiments decree.

Conducting an animal experiment
As mentioned before, the Dutch law requires adequate expertise and competence before a person can conduct an animal experiment independently. A person that meets the following three criteria can be registered by the animal welfare officer (as referred to in article 13f3c of the Dutch law on animal experiments) as being authorized to design an animal experiment and to submit a project or experimental protocol for approval.

- Relevant MSc degree from within the EU/EEA
- Completed recognized course in laboratory animal science
- Species-specific knowledge (as obtained in one or more species-specific modules)

Additional proof of expertise and competence may be required before the animal welfare officer allows a person to conduct an animal experiment independently. Preceding the current course, you are offered the opportunity to do a test on basic biological knowledge (mainly anatomy and physiology). Passing this test helps prove to the animal welfare officer that you have appropriate expertise to conduct an animal experiment (competence needs to be proven and/or developed in other ways).

Initial competences

Preceding the current course, you are offered the opportunity to do a test on basic biological knowledge (mainly anatomy and physiology). Passing this test proves to the animal welfare officer that you have appropriate expertise to conduct an animal experiment (competence needs to be proven and/or developed in other ways).
Mandatory knowledge
ZSS06100 Laboratory Safety

Final competences

1 After successful completion of this course students are expected to be able to:
- Understand the (inter)national legislation regarding animal experiments at a relevant level (EU module 1)

2 • Identify different aspects of ethics and the 3Rs and to apply and discuss the principles learned to the ethical and welfare issues raised by the use of animals in scientific procedures (EU modules 2 and 9)

3 • Reproduce the basic and relevant principles of anatomy, physiology, and animal behaviour in relation to husbandry (EU module 3.1)

4 • Reproduce the basic principles of animal care, health and management (including personal health and zoonoses) (EU module 4)

5 • Recognize and classify pain, suffering an distress (EU module 5)

6 • Compare the (species-specific) principles of humane killing, to determine the most appropriate method (EU module 6.1)

7 • Reproduce theoretical knowledge on appropriate methods of handling and restraint, and appropriate techniques for injection, dosing and sampling relevant to the species (EU module 7)

8 • Reproduce appropriate knowledge on design concepts, possible causes and elimination of bias, and statistical analysis (EU module 10)

9 • Develop a research protocol, while ensuring compliance with the relevant terms and conditions (including implementation of the 3Rs) (EU module 11)

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Group work, Lecture, Practical, Independent work

Extra information on the teaching methods

Compulsory and active participation in lectures, practicals and tutorials. In addition two group (n=5) assignments should be completed:

- prepare and present a research protocol to conduct an animal experiment,
- assess a published scientific paper with special at-tention to the use of laboratory animals.

Study material

None

References

All materials necessary for the course are offered through Brightspace.
Additional information can be found in the following books.

- Zutphen, L.F.M. van, Baumans, V. and Beynen, A.C. (2001). Principles of Laboratory Animal Science: A contribution to the humane use and care of animals and to the quality of experimental results. Revised edition. Elsevier, Amsterdam. ISBN: 9780444506122.
- Hau, J. and Schapiro, S.J. (2010). Handbook of Laboratory Animal Science, volume 1 – Essential Principles and Practices. CRC Press, Boca Raton. Available as e-book in the WUR library.

Course content-related study coaching

A study guide, synopsis of lecturers, handouts of recent papers and handouts for laboratory class work.
The course textbook in Dutch (less expensive than English copy):
Zutphen, L.F.M. van, V. Baumans & F.Ohl. (2009). Handboek Proefdierkunde. proefdieren, dierproeven, alternatieven en ethiek. Uitgeverij Elsevier gezondheidszorg, Maarssen. Vijfde druk. ISBN 9789035229815.
The course textbook in English:
Zutphen, L.F.M. van, Baumans, V. & Beynen, A.C. (2001). Principles of Laboratory Animal Science: A contribution to the humane use and care of animals and the quality of experimental results. Elsevier Science Publishers, Amsterdam, 2nd ed. revised. ISBN-13: 978-0444506122.
or
Hau and Schapiro (2021). Handbook of Laboratory Animal Science, available as e-book in the WUR library and https://doi.org/10.1201/9780429439964

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Professional practice, Participation, Written assessment with multiple-choice questions, Written assessment with open-ended questions, Written assessment, Assignment

Examination methods in case of periodic assessment during the second examination period

Written assessment with multiple-choice questions, Written assessment with open-ended questions, Written assessment

Examination methods in case of permanent assessment

Professional practice, Participation, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

- written test with open questions with several subquestions, combined with multiple choice questions, closed questions
- two group assignments (10% and 40%).
- Assessment of scientific paper, in a group of 5 students. In the case of an

insufficient grade for an assignment, the student should discuss with the coordinator how to redo the assignment.
- Report and oral presentation of the research protocol, in a group of 5 students.In the case of an insufficient grade for an assignment, the student should discuss with the coordinator how to redo the assignment.

Calculation of the examination mark

The minimum mark for the written test is 5.5 and for the assignments 5.5.