Purpose of the course: The course provides advanced training in the recognition, prevention and alleviation of pain and distress in laboratory species. The main purpose of the course is to enable participants to apply and assess the value of improvements to the methods used in projects that involve the use of live animals. Implementing such improvements is a key element in Refining animal research – a legal and ethical requirement of Swedish and European legislation.

Intended learning outcomes: After completion of this course, the students should be able to apply refinements effectively. They will also be able to evaluate protocols to determine what additional modifications could be made to improve animal welfare. They should also appreciate the ethical, scientific and practical issues involved in assessing and preventing pain and distress.

Specific entry requirements: Students need to complete the “Function A” laboratory animal science course (“to carry out scientific procedures on animals”), or must have completed an equivalent course.
The course provides a broad understanding of the physiology of pain and distress, concepts of consciousness in animals, and means of assessing pain and distress in animals. Key details on the pharmacology of analgesic agents is provided to underpin selection of appropriate treatment regimens in laboratory species. The potential confounding effects of pain, distress and analgesic use on research protocols will be described, together with means of avoiding these confounding effects.

Contents of the course

The course will adopt a blended learning approach that combines e-learning, seminar lectures, discussions and interactive sessions. Four e-learning modules on assessment of pain and distress and management of perioperative pain will be included in the course. In addition, seminars will provide information on:

- What we know about pain and distress in people and animals, and an introduction to the physiology of pain and nociception.
- How methods of assessing pain and distress have evolved, and provide an up-to-date summary of the methods that can be used in a range of different species.
- How we can assess distress and the general welfare state of animals, and how the use of score sheets can provide more structured and reliable assessments.
- How different types of analgesic act to reduce or eliminate pain, and the practicalities of managing pain in a research setting.
- Methods of reducing, avoiding or alleviating pain and distress by improving periprocedural care, and by refinement of research procedures.
- Why analgesics may be withheld in some research protocols, and explain how some of these barriers to effective pain relief can be overcome.

The seminars incorporate video material and interactive tuition in assessing pain and distress. The course also includes problem-solving sessions, which encourage students to reflect on the application of the course content in their own research area, and encourages them to discuss and explain their work with other participants.

Teaching and learning activities

The main instructor of this course is internationally-recognized expert Professor Paul Flecknell, MA, VetMB, PhD, DECLAM, DLAS, DECVA, (Hon) DACLAM, (Hon) FRCVS, author of the Handbook Laboratory Animal Anaesthesia, 4th Edition, and a number of research publications and educational material in the field. The course leader is Head of Education at Comparative Medicine, Rafael Frias, DVM, MSc, PhD, Assoc. Prof (LAS).