# LAS-Learning

# Course Organisers Instructions

EU Module 5 - Recognition of pain, suffering and distress - Species specific: Pigs

Development of interactive e-learning modules on specific areas of the Education & Training framework facilitating the implementation of DIR 2010/63/EU

Contract n. º 09200200.A092004/2021/862589/SER/ENV.B2

**Authors:**
José Manuel Sánchez Morgado

12/02/2025

v2.0 Second document version

# *Table of contents*

# 1. Module Description

## a. Overview

Throughout this module, *Recognition of pain, suffering and distress - Species-specific: Pigs*, you will acquire the ability to identify indications of pain or distress in farm animals utilised for scientific endeavors, specifically pigs. Additionally, the module will provide guidance on assessing their welfare condition and determining if they have reached a humane endpoint. Subsequently, you will gain the capability to categorise the severity of procedures and select the optimal analgesic and anesthetic measures.

This document provides guidance and suggestions to support the course organiser's efforts. Each module is aligned with the learning outcomes outlined in the EU Education & Training framework for laboratory animal science.

We recommend consulting the EC Training and Education framework guidance document if you are accessing the site independently. This resource offers an overview of training requirements for individuals with different responsibilities under their relevant national legislation.

Further reading and additional education and training may be necessary to meet national or institutional training requirements. At the end of each module, you will find a list of recommended further readings and references cited throughout the content.  Links to these references are provided whenever possible.

This module was developed by José Manuel Sánchez Morgado, a professional known for his contributions to animal welfare, veterinary science, and related fields. His work spans research, publications, and training in these fields. The module was further revised by an international Reflection Group panel, with coordination led by Nuno H. Franco.

*The module is currently in the testing phase. We appreciate your collaboration in integrating it into your courses and providing feedback. After completing a module, please fill out the form below with your feedback.*

## b. Learning Objectives

This module will equip participants with essential knowledge and skills to navigate animal research's ethical, legal, and practical aspects. The key learning objectives include:

1. General introduction.
2. Pigs.

# 2. Course Program

The module is organised into different chapters, with lessons and learning objectives for the participants as follows:

| Chapter | Lesson | Learning objectives |
|---|---|---|
| **General introduction** | 1-4 | Get to know the learning objectives<br>Principles of clinical evaluation<br>Humane Endpoints<br>Principles of Pain Management in Rats and Mice |
| **Pigs** | 5-14 | Introduction<br>Recognise normal and abnormal behaviour<br>Recognise signs of pain<br>Methods for assessing the welfare of animals<br>Humane endpoint<br>Classifications in the Directive<br>Pain management - anaesthesia and analgesia<br>Module summary<br>List of references and further reading<br>Assess your knowledge |

Table 1 - Learning objectives per parts and lessons.

## a. Progress Tracking

Once learners begin working through a module, their progress is automatically tracked. This allows them to pause and resume their studies at any point. Upon completing the module, learners retain access to all sections, enabling them to revisit and review specific topics to reinforce their understanding.

## b. Model Structure and Implementation Guidance

The module is structured into several parts, which were designed to be followed in sequence but can also be taken iteratively based on the learner's needs. Please note that a **certificate of completion** is issued exclusively to learners who finish all parts of the module.

From a pedagogical perspective, each tutor is responsible for deciding which materials to use in face-to-face sessions, which parts learners should complete independently, and whether to mandate their completion. However, it is essential to consider the time required to complete the eModule or its parts to avoid overburdening learners.

We highly recommend completing the module to ensure it aligns with your course's content and scope. Familiarising yourself with the material will also enable you to engage more effectively with students on the various topics covered in the eModule.

# c. In-Depth Explanation Lesson by Lesson

| Lesson | Title | LO | Explanation |
|--------|-------|-----|-------------|
| 1 | Introduction | | Image and short introduction |
| 2 | A1 - Principles of clinical evaluation | 5.3 | Image and short introduction<br>Animals as patients with 1 image<br>Causes of illness in research animals with 3 tabs<br>How to detect and alleviate the impact of disease with 5-step cards with images<br>Potential signs of discomfort, stress, pain with 3 images<br>Clinical Assessment and Scoring with 3 tabs with images and table, 2 images, 1 list<br>Frequent assessment of discomfort, pain, distress with 1 image<br>Involvement of all members of the study team and awareness of their roles and responsibilities with 1 list<br>Image with short summary |
| 3 | A2 - Humane Endpoints | 5.4 | Image and short introduction<br>3 quotes by Russell & Burch<br>Endpoints in Biomedical Research with tabs with images, 1 interactive image and 2 flip-cards<br>Deciding on the humane endpoints for a procedure<br>Defining the actions to be taken with 4 images<br>How to refine the Humane Endpoints with 1 image<br>Conclusions |
| 4 | A2 - Humane Endpoints | 5.6 | Image and short introduction<br>List of session topics<br>Pain - Definition, Modulation and Consequences<br>The importance of pain assessment<br>Quiz: Test yourself: Pain and nociception - the difference<br>Treatment of pain - which drug should we choose? with 1 table, 1 image<br>Analgesia - Pre-emptive and multimodal analgesic regimes tabs<br>Non-pharmacological management of pain with 1 interactive image<br>Summary of key points |
| 5 | Recognise normal and abnormal behaviour | 5.1<br>5.2 | Image and short introduction<br>Natural behaviour with 3 images<br>Social behaviour with 4 images<br>Playful behaviour and implications for pig welfare with 1 image, short introduction<br>Housing, Foraging, Fighting text descriptions |

| 6 | Recognise signs of pain | 5.2 | Image and short introduction<br>Pain with notes list<br>Pain Assessment with indicators list with 3 tabs with 1 image, 2 references |
|---|---|---|---|
| 7 | Methods for assessing the welfare of animals | 5.3 | Image and short introduction<br>Welfare assessment<br>Factors in promoting good welfare with a list<br>Housing<br>The Animal Welfare Assessment Grid with diagram, 4 cards, 4 tabs with images<br>Tail posture and motion with 3 flip-cards with images, 3 references |
| 8 | Humane endpoint | 5.4 | Humane endpoints, differentiate them from experimental endpoints, and how to satisfactorily apply them to your animal procedures |
| 9 | Classifications in the Directive | 5.5 | Image and short introduction<br>Severity categories description<br>Examples of non-recovery severity with cards with 2 images<br>Examples of mild severity with cards<br>Examples of moderate severity with cards with 2 images<br>Severe description |
| 10 | When to administer anaesthesia or analgesia | 5.6 | Image and short introduction<br>Anaesthesia with ARRIVE Guidelines<br>Effects of untreated pain with the list<br>When to administer anaesthesia with 2 videos<br>When to administer analgesia description |
| 11 | Summary | | Module summary |
| 12 | References and Further Reading | | References for additional materials |
| 13 | Knowledge-check | | Assesses progress and knowledge acquired during the module |

Table 2 - Explanation lesson by lesson.

# 3. Participants' Profile

This module is intended for (bio)medical researchers, laboratory animal science students, university students, biology/medical teachers, ethical board members, and anyone interested in learning more about techniques for finding non-animal methods/alternatives in research.

No specific prior knowledge is necessary. However, a basic understanding of searching bibliographic databases and a background in laboratory animal science and/or non-animal methods can be beneficial.

# 4. eModule

The eModule provides clear definitions, essential knowledge, and interactive components designed to enhance understanding of key animal ethics theories and develop critical thinking skills. Participants will learn to ethically frame and evaluate animal research from a broad perspective and a case-by-case approach.

The content and references are curated from expert sources, including researchers and information specialists, ensuring high-quality and reliable information. The module is presented dynamically, combining text, images, built-in exercises, and videos to engage learners effectively. It can be integrated into courses as homework or used during a lecture day. Many lessons are designed to deliver comprehensive information and understanding without additional in-class interaction.

## a. Limitations

While the lesson on the welfare and behavior of domestic pigs provides valuable insights and tools for researchers, there are several limitations that may affect its application and effectiveness. By addressing these limitations, future iterations of the lesson can become more comprehensive and effective, ultimately leading to better welfare outcomes for pigs in research settings.

Searching for alternatives, including assessing (the quality of) the search, reporting, and documentation, is not easy. It requires several tools, practice, and often team efforts to be achieved appropriately. Therefore, not every tool or method could be explained in detail within this eModule. However, references and further reading suggestions open vast possibilities for interested users to learn more about this topic.

## b. Blended Learning Approach

E-learning modules offer significant advantages, particularly for learners who may find it challenging to attend traditional intensive training sessions spanning several days. Such sessions can disrupt work schedules and limit participants' ability to balance learning with other responsibilities. While this eModule covers all required learning outcomes, we do not advocate entirely replacing face-to-face teaching (or "live" online discussion sessions) with e-learning. Instead, we recommend a blended learning approach (hybrid or mixed-mode learning). This approach combines the flexibility of e-learning with the engagement of interactive, live sessions, ensuring that learners receive the necessary information while accommodating those who require greater flexibility.

The modules are split into short, manageable lessons, allowing participants to integrate learning activities into their daily schedules seamlessly.

# 5. Implementing Blended Learning Strategies

**Flipped Classroom Arrangement**

Before face-to-face classes, learners are introduced to the course contents (for example, by completing our e-learning modules). You can recommend that learners take the whole course (and request a certificate of completion) or focus on specific lessons or chapters.

This approach can:

- Familiarise learners with the content in advance, helping them better understand complex concepts.
- Prepare and motivate learners to engage more actively in their learning and during face-to-face classes.
- Harmonise learners' knowledge levels before in-person classes.
- Provide sufficient background knowledge for group work, allowing for more focused and productive discussions.
- Provide a starting point for interactive discussion.

**Consolidate Learning and Prepare for Exams**
The courses are designed to align with the learning outcomes of traditional laboratory animal science courses. Learners can use each module to study and prepare for the final exam. Additionally, the built-in quizzes allow learners to test their knowledge and track their progress.

**Address Expertise Gaps in Your Facility**
Gathering expertise across all subjects covered in the EU-functions modules can be challenging, especially in smaller establishments. This may hinder the ability to deliver training that meets all outcomes of the Education and Training framework to a high standard. Using these modules as a basis, tutors and learners can access quality reference material that could mitigate such gaps and ensure education and training are up to standard.

**Use Modules as Teaching Resources**

Tutors can integrate various components—such as text, videos, images, interactive exercises, and quizzes—into their teaching activities. This not only boosts engagement but also caters to different learning styles. For each module, we provide suggestions for topics that can be incorporated into interactive discussion sessions.

# 6. Textbooks and Reading Materials

The **"References and Further Reading"** lesson provides most references and readings. They comprise scientific articles, sections of books, websites, and videos. Clicking on any link will open a new window to download or visualise the additional material. Several links to further resources can also be found in the module contents to better guide the reader.

The additional materials provide more information on specific topics, tools, and resources. They are ideal for learners who wish to expand their knowledge or gain a more comprehensive understanding of the issues.