



**LAS-Learning**

# Trainees Instructions

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

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

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

### **Authors:**

George Stilwell

12/02/2025

v2.0 Second document version

**Supported by:**



**Partners:**

**ONESOURCE**  
Consultoria Informática Lda.





## ***Table of contents***

<b>1. Module Description</b>	<b>2</b>
1.1 Overview	2
1.2 Topics Covered	2
1.3 Learning Objectives	2
<b>2. Prerequisites and Requirements</b>	<b>3</b>
2.1 Requirements	3
<b>3. Grading and Completion</b>	<b>4</b>
<b>4. Textbooks and Reading Materials</b>	<b>5</b>
<b>5. Course Program</b>	<b>6</b>
5.1 Progress Tracking	6
5.2 Module Structure	6
5.3 In-Depth Explanation Lesson by Lesson	6
<b>6. Target Audience</b>	<b>9</b>



# 1. Module Description

## 1.1 Overview

Throughout this module - Recognition of pain, suffering and distress - Species-specific: Farm Animals -, you will acquire the ability to identify indications of pain or distress in farm animals utilised for scientific endeavours, specifically ruminants, pigs, and domestic fowl. Additionally, the module will guide on the assessment of their welfare condition and determine if they have reached a humane endpoint. Subsequently, you can categorise the severity of procedures and select the optimal analgesic and anaesthetic measures.

This module will cover one topic: Ruminants.

If you are visiting the site independently, you should consult the EC Training and Education framework [guidance document](#), which provides an overview of training requirements for individuals with different responsibilities under their relevant national legislation. Additional education and training may be necessary to meet national or institutional requirements.

This document offers suggestions for supporting your training. Each module aligns with the learning outcomes specified by the EU Education & Training framework for laboratory animal science. This module was developed by George Stilwell, a professional known for his contributions to animal welfare, veterinary science, and related fields with extensive experience researching, publishing, and training. In addition, an international Reflection Group panel has further refined the content, while Nuno H. Franco managed overall coordination.

*Your collaboration and feedback are greatly appreciated, as the module is currently in the testing phase.*

## 1.2 Topics Covered

- Ruminants

## 1.3 Learning Objectives

- Understand the biology, behavior, and management practices of domestic ruminant species to ensure their health, productivity, and welfare in agricultural settings

To support your ongoing learning, each module concludes with a curated list of recommended readings and cited references. Whenever possible, these references are linked to facilitate further exploration.



## 2. Prerequisites and Requirements

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

This module is designed to guide you step by step, eliminating the need for prior study.

### 2.1 Requirements

- Completion of lessons and understanding of learning objectives.
- Participation in knowledge checks and assessments to evaluate understanding.



### **3. Grading and Completion**

Grading will be based on the successful completion of knowledge checks and assessments provided at the end of each module. Upon finishing all parts of the module, students will receive a certificate of completion.



## 4. 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.



## 5. Course Program

The module is organised into 2 chapters, with lessons and learning objectives as follows:

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

Table 1 - Learning objectives per parts and lessons.

### 5.1 Progress Tracking

Once you begin working through a module, your progress is tracked, and you can break off and resume your studies at any point. Once the module is completed, the trainee can access any section to refresh their understanding of a topic.

### 5.2 Module Structure

The module is divided into several parts, and although they were designed to be followed sequentially, they can also be taken iteratively. Please note that a certificate of completion is only issued to learners who complete all module parts.

### 5.3 In-Depth Explanation Lesson by Lesson

Lesson	Title	LO	Explanation
<b>1</b>	Introduction		Image and short introduction Introduction with 1 image
<b>2</b>	A1 - Principles of clinical evaluation	5.3	Image and short introduction Animals as patients with 1 image Causes of illness in research animals with 3 tabs How to detect and alleviate the impact of disease with 5-step cards with images



			<p>Potential signs of discomfort, stress, pain with 3 images</p> <p>Clinical Assessment and Scoring with 3 tabs with images and table, 2 images, 1 list</p> <p>Frequent assessment of discomfort, pain, distress with 1 image</p> <p>Involvement of all members of the study team and awareness of their roles and responsibilities with 1 list</p> <p>Image with short summary</p>
<b>3</b>	A2 - Humane Endpoints	5.4	<p>Image and short introduction</p> <p>3 quotes by Russell &amp; Burch</p> <p>Endpoints in Biomedical Research with tabs with images, 1 interactive image and 2 flip-cards</p> <p>Deciding on the humane endpoints for a procedure</p> <p>Defining the actions to be taken with 4 images</p> <p>How to refine the Humane Endpoints with 1 image</p> <p>Conclusions</p>
<b>4</b>	A2 - Humane Endpoints	5.6	<p>Image and short introduction</p> <p>List of session topics</p> <p>Pain - Definition, Modulation and Consequences</p> <p>The importance of pain assessment</p> <p>Quiz: Test yourself: Pain and nociception - the difference</p> <p>Treatment of pain - which drug should we choose? with 1 table, 1 image</p> <p>Analgesia - Pre-emptive and multimodal analgesic regimes tabs</p> <p>Non-pharmacological management of pain with 1 interactive image</p> <p>Summary of key points</p>
<b>5</b>	Recognise normal behaviour	5.1	<p>Image and short introduction</p> <p>Normal behaviours</p> <p>Hierarchy, cohesive and agonistic behaviours with 1 interactive image, 4 images, 1 video</p> <p>Synchronised behaviours with 2 videos, 1 diagram</p> <p>Reproductive behaviour with 3 images, 1 video</p> <p>Play-behaviour with 5 images, 1 diagram</p> <p>Normal healthy appearance with 2 interactive images, 5 flip-cards with images, 2 images</p>
<b>6</b>	Recognise abnormal behaviour and signs of pain	5.2	<p>Image and short introduction</p> <p>Behaviour changes with 1 list</p> <p>Pain signs with 1 image</p> <p>Physiological response to pain with 1 diagram, 5 images, 1 list</p> <p>Major pain signs with 1 video, 10 images</p> <p>Pain assessment and scoring with 7 flip-cards with images quiz, 4 images, 1 carousel with 2 images</p>





			Major causes of pain in ruminants with 2 videos, 11 images Stress with 1 video, 1 interactive image, 4 images, 1 list Boredom and frustration behaviours with 2 videos, 2 images Other causes of behaviour changes
<b>7</b>	Methods for assessing the welfare of animals	5.3	Image and short introduction Welfare assessment with 1 image, 1 animated image, 1 reference
<b>8</b>	End points and euthanasia	5.4	Image and short introduction Recognise EXTREME suffering signs with 4 images, 2 tabs with images, 3 expandable sections with 1 image
<b>9</b>	Classifications in the Directive	5.5	Image and short introduction Severity categories description Examples of non-recovery severity with cards with 2 images Examples of mild severity with cards Examples of moderate severity with cards with 2 images Severe description
<b>10</b>	Pain management - anaesthesia and analgesia	5.6	Image and short introduction The approach to painful procedures with a list, 1 image Pain management with 1 video Pharmaceutical pain management with 1 list, 1 image Sedation with 1 image Significant secondary and collateral effects of anaesthesia in ruminants, description Further reading topics
<b>11</b>	Summary		Module summary
<b>12</b>	References and Further Reading		References for additional materials
<b>13</b>	Knowledge-check		Assesses progress and knowledge acquired during the module

Table 2 - Explanation lesson by lesson.



## 6. Target Audience

This module is intended for (bio)medical researchers, participants in laboratory animal science courses, university students, biology/medical teachers, animal welfare body members, regulators, and anyone interested in learning more about animal research ethics and the principles of Replacement, Reduction, and Refinement of animal use for scientific and educational purposes.