STUDY GUIDE

Species specific course:

Horses and Donkeys

Introduction to Laboratory Animal Science

Universiteit Utrecht

Organization:

Department of Animals in Science & Society, Faculty of Veterinary Medicine, Utrecht University

Department of Equine Sciences, Faculty of Veterinary Medicine, Utrecht University

Contact:

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Content

Objective:

The objective of this module is to present basic and appropriate biology, care, health and management of horses and donkeys, recognition of pain, suffering and distress in these animals and minimally invasive procedures without anaesthesia to be applied on these animals. This course meets the standards for the species specific education and training requirements for persons designing projects and procedures for the previously mentioned species.

Competence:
For the function 'designing procedures and projects' the Dutch government requires competency. On December 18, 2014 the new legislation regarding animal experimentation was implemented. Due to this implementation the course on Laboratory Science has been adapted. The course contains now two parts, a basic course (Introduction to laboratory animal science) and a species specific module. The basic course certificate and, at least, one species specific certificate will give the required competence. From August 1, 2015 the competence is limited. You are not allowed to perform any procedure on animals, unless there is supplementary education. From now you are competent when you are skilled (competence profile, species and skill(s) stated). After successful completion of the new basic course and after successful completion of the present module on horses and donkeys, you will be competent to design procedures and projects and to execute simple procedures on these animals. Further skills have to be obtained by working under supervision until competence is demonstrated. Only then are you allowed to work with animals independently.

Workload:
The number of credits that can be obtained after successful completion of the course is 1.5 ECTS (European Credit Transfer and Accumulation System). The length of the course is one week (fulltime, 09.00-17.30 hrs). Participation in all parts of the course is mandatory to obtain a certificate.

Course material:
During the course the book Principles of Laboratory Animal Science, revised edition, 2001, L.F.M. van Zutphen, V. Baumans and F. Ohl (eds.) (ISBN 13: 978-0-444-50612-2) will be used. Further material will be provided digitally or by handouts.

Learning outcomes:
Learning outcomes are in accordance with the EC Training and Education Document relating to Directive EU/2010/63,
http://ec.europa.eu/environment/chemicals/lab_animals/pdf/Endorsed_E-T.pdf

This species-specific course includes the following modules (original numbering from the ECTE Document is maintained):
3.1 Basic and appropriate biology – species specific (theory)
3.2 Basic and appropriate biology – species specific (practical)
4. Animal care, health and management (theory)
5. Recognition of pain, suffering and distress

6.1 Humane methods of killing (theory)
7. Minimally invasive procedures without anaesthesia – species specific (theory)
8. Minimally invasive procedures without anaesthesia – species specific (skills)

For details, see separate chapters in this study guide.

Final examination:

A scientific article, which has used horses or donkeys as lab animals, has to be analyzed using the ARRIVE guidelines: (Kilkenny C, Browne WJ, Cuthill IC, Emerson M, Altman DG (2010) Improving bioscience research reporting: the ARRIVE guidelines for reporting animal research.). The student has to prepare a small presentation (10-15 min) which is given at the end of the course and discuss the critical appraisal of the paper with the audience (fellow students and teachers). The final grade awarded for participation in this course will be based on this presentation and discussion. A minimum score of 5,5 is needed to acquire the certificate.

Certificate:
If the participant has met all legal requirements and has received a minimum score of 5,5 for the presentation at the end of the course, the participant will receive a certificate for this species-specific module horses & donkeys.
If you do not meet all legal requirements, e.g. not having obtained a Master degree (yet), you will receive a written confirmation stating that you followed the module and successfully passed the exam. Together with the certificate for the basic course, after obtaining your Master degree, you can request the final certificate confirming that you meet all legal requirements of the Dutch legislation to be registered for the function “designing projects and procedures for horses and donkeys.

Program outline:

Day / location	Time	Subject	Type	Teachers / group
Monday Coll[1]	08.00-08.30	Introduction: Overview topics, practical matters and study materials	Lecture	Ensink / Van Loon / Theelen
Coll[1]	08.30-10.30	Anatomy, physiology and reproduction	Lecture / e-learning	Theelen
Coll[1]	10.45-12.45	Nutrition	Lecture / PBL	Van Doorn
	12.45-13.30	Lunch		
Coll[1]/L7[2]	13.30-17.30	Behaviour and factors influencing behaviour, welfare and study results	Lecture / Practical	Van Dierendonck
Tuesday Coll[1]	08.30-10.30	Monitoring welfare and the maintenance of welfare/health records	Lecture / Practical	Van Loon
L7[2]	10:45-12.45	Animal handling and restraining, identification, transportation and husbandry	Practical	Theelen
	12.45-13.30	Lunch		
Coll[1]/L7[2]	13.30-15.30	Hygiene practices and maintaining healthy animals	Lecture / Demo	Ensink / Theelen
Coll[1]	15.45-16.45	Health hazards associated with working with horses and donkeys (injury, zoonosis, allergies)	Lecture	Theelen
Wednes-day Coll[1]/L7[2]	08.30-12.30	Recognition of pain and distress, the use of composite pain scores and defining humane endpoints	Lecture / Practical	Van Loon
	12.30-13.15	Lunch		
Coll[1]	13.15-15.15	Management and prevention of pain	Lecture / PBL	Van Loon
Coll[1]	15.30-17.30	Euthanasia	Lecture / PBL	Van Loon
Thursday L7[2]	08.30-12.30	Sample collection and administration of substances for research purposes	Practical	Ensink / Theelen
	12.30-13.15	Lunch		
Coll[1]	13.15-15.15	The principles of the 3Rs in relation to research with horses/donkeys	Lecture / BPL	Van Loon
Coll[1]	15.30-17.30	Comparing horses and donkeys	Lecture	Van Loon
Friday Coll[1]	08.30-12.30	Critical appraisal of a scientific paper and preparation time for the final presentation	Study time	No teacher
Coll[1]	13.30-15.30	Final presentation & discussion	Exam	Ensink / Van Loon / Theelen
Coll[1]	15.30-16.30	Course evaluation	Evaluation	Ensink / Van Loon / Theelen

[1] Colloquium Dept. of Equine Sciences, Yalelaan 114, Utrecht

[2] Pr.zaal L7 Dept. of Equine Sciences, Yalelaan 114, Utrecht

Coordination and teachers

The module has been developed by the Department of Equine Sciences, Faculty of Veterinary Medicine, Utrecht University. Each of the below mentioned representatives have a different field of expertise:

- Dr. Jos Ensink, DVM, PhD, Dipl.ECVS (http://www.uu.nl/staff/JMEnsink/0)
- Dr. Thijs van Loon, DVM, PhD, Dipl.ECVAA (http://www.uu.nl/staff/JPAMvanLoon)
- Drs. Mathijs Theelen, DVM, Dipl.ECEIM (http://www.uu.nl/staff/MJPTheelen)

For each course one of these coordinators will be appointed as logistic coordinator and contact person for practical issues.

Other teachers that are involved in this course:

- Dr. Ing. David van Doorn, Msc, PhD (http://www.uu.nl/staff/DAvanDoorn)
- Dr. Machteld van Dierendonck, PhD (http://www.uu.nl/staff/MCvanDierendonck)

Module 3.1 Basic and appropriate biology – species specific (theory)

This module provides an introduction to the basic principles of horse and donkey behaviour, care, biology and husbandry. It incorporates information in relation to anatomy and physiological features, including reproduction, behaviour and routine animal husbandry and enrichment practices. It is not intended to provide more than the minimum background information which is needed for someone to be able to begin work under supervision.

Learning Outcomes

Trainees should be able to:

3.1.1. Describe basic anatomy, physiology, reproduction and behaviour of horses and donkeys

3.1.2. Recognize and describe life events that have the potential to cause suffering including sourcing, transport, housing, husbandry, handling and procedures (on a basic level).

3.1.3. Indicate how good welfare can promote good science: e.g. explain how the failure to attend to biological and behavioural needs may affect the outcome of procedures.

3.1.4. Indicate how husbandry and care may influence experimental outcome and the number of animals needed e.g. example where housing climate influences the outcome, hence randomisation.

3.1.5. Describe the dietary requirements of horses and donkeys and explain how these can be met.

3.1.6. Describe the importance of providing an enriched environment (appropriate to horses and donkeys and the science) including social housing and opportunities for exercise, resting and sleeping.

3.1.7. Recognise that there are different breeds of horses and donkeys, and that these can have different characteristics which can affect both welfare and science.

3.1.9. Maintain and interpret accurate, comprehensive records of horses and donkeys held in the animal facility, including the wellbeing of the animals.

Module 3.2 Basic and appropriate biology – species specific (theory)

Following module 3.1 practical training, under supervision, should provide each individual with the expertise and skills needed for them to carry out their particular function. Practical training requirements will, inevitably, differ according to function.

Learning Outcomes

Trainees should be able to:

3.2.1. Be able to approach, handle and restrain a horse or donkey and return it to its stable in a calm, confident and empathetic manner such that the animal is not distressed or caused harm.

Module 4. Animal care, health and management (theory)
This module provides information on various aspects of animal health, care and management including, environmental controls, husbandry practices, diet, health status and disease. It also includes relevant basic learning outcomes relating to personal health and zoonoses.

Learning Outcomes

Trainees should be able to:

4.1. Describe suitable routines and husbandry practices for the maintenance, care and welfare of horses and donkeys used in research.

4.2. Describe suitable environmental and housing conditions for horses/donkeys kept as laboratory animals, how conditions are monitored and identify the consequences for the animal resulting from inappropriate environmental conditions.

4.3. Recognize that changes to or disruption of circadian or photoperiod can affect horses/donkeys

4.4. Describe the biological consequences of acclimatization, habituation and training

4.5. Describe how the animal facility is organized to maintain an appropriate health status for the horses/donkeys and the scientific procedures.

4.6. Describe how to provide water and an appropriate diet for horses/donkeys kept as laboratory animals including the sourcing, storage and presentation of suitable foodstuffs and water

4.7. List the methods, and demonstrate an understanding of appropriate, safe and humane handling, sexing and restraint of horses/donkeys for common scientific procedures.

4.8. Name different methods for marking individual animals and state advantages and disadvantage for each method. Be able to identify a horse by reading its transponder.

4.9. List potential disease risks in the animal facility, including specific predisposing factors which may be relevant. Name methods available for maintaining appropriate health status (including use of barriers).

4.12. List the correct procedures for ensuring health, welfare and care of horses/donkeys during transport.

4.13. List potential human health hazards associated with contact with horses and donkeys (including allergy, injury, infection, zoonosis) and how these can be prevented.

Module 5: Recognition of pain, suffering and distress

This module prepares individuals to be able to identify normal condition and behaviour of experimental horses/donkeys and enable them to differentiate between a normal animal and one which is showing signs of pain, suffering or distress which could be a result of factors including environment, husbandry or the effect of experimental protocols. It will also provide information regarding severity classifications, cumulative severity and the use of humane endpoints.

Learning Outcomes

Trainees should be able to:

5.1. Recognise normal or desirable behaviour and appearance of the individuals in the context of species, breed, environment and physiological status.

5.2. Recognise abnormal behaviour and signs of discomfort, pain, suffering, or distress, as well as signs of positive well-being and principles of how pain, suffering and distress can be managed.

5.3. Discuss factors to be considered and methods available for assessing and recording the welfare of horses/donkeys, e.g. use of composite pain scores.

5.4. Describe what a humane end point is. Identify criteria to be used to set humane endpoints. Define action to be taken when a humane endpoint is reached and consider possible options for refining methods to finish at an earlier endpoint.

5.5. Describe the severity classifications included in the Directive and give examples of each category; explain cumulative severity and the effect this may have on the severity classification.

5.6. Describe the circumstances when anaesthesia or analgesia may be necessary to minimise pain, suffering, distress or lasting harm.

Module 6.1: Humane methods of killing (theory)
This module provides information on the principles of humane killing and the need to have someone available, at all times, who is able to kill an animal quickly and humanely if required. The module will include information and descriptions of the different methods available to kill horses and donkeys.

Learning Outcomes

Trainees should be able to:

6.1.1. Describe the principles of humane killing of horses and donkeys (e.g. what constitutes 'a good death')

6.1.2. Describe the different methods by which horses and donkeys are allowed to be killed, the influence different methods can have on scientific outcomes, and how to select the most appropriate method.

6.1.3. Explain why someone competent to kill horses or donkeys should be available at all times (whether care staff or person carrying out procedures)

Module 7: Minimally invasive procedures without anaesthesia – species specific (theory)

This module provides an introduction to the theory relating to minor procedures. It provides information about appropriate methods of handling and restraint and describes appropriate techniques for injection, dosing and sampling relevant to the species. It should provide information sufficient for individuals to understand what will be required of them before they go on to be trained in the practical aspects of these skills whilst under supervision.

Learning Outcomes

Trainees should be able to:

7.1. Describe appropriate methods and principles to be followed when handling horses/donkeys (including methods of restraint and use of restricted environments).

7.2. Describe the biological impact of procedures and restraint on physiology.

7.3. Describe refinement opportunities for procedures and restraint e.g. through training (using positive re-enforcement), habituation and socialization.

7.4. Describe techniques/procedures including, for example, injection, sampling and dosing techniques (routes/volumes/frequency), dietary modification, nasogastric intubation, tissue biopsy and behavioural tests.

7.5. Describe how to perform minor techniques and relate appropriate sample volumes and sampling frequencies for the relevant species.

7.6. Describe the need for rigour and consistency in conducting scientific procedures and the correct recording and handling of samples.

7.7. Describe appropriate methods for the assessment of the welfare of horses/donkeys with respect to the severity of procedures and know what appropriate action to take.

7.8. Recognize that refinement is an on-going process and know where to find relevant up-to-date information.

7.9. Describe the biological consequences of transport, acclimatization, husbandry conditions and experimental procedures on horses/donkeys and describe how these can be minimised.

Module 8: Minimally invasive procedures without anaesthesia – species specific (skills)

This module delivers practical elements of training relevant to Module 7. Practical training for minor procedures can be taught through a number of methods using different tools which are available and designed for the purpose (this is likely to include synthetic animal models and the use of cadavers). The module should be designed in such a way that it will enable the trainee to attain a level of proficiency such that, when commencing work under supervision, (s)he should cause no pain, suffering, distress or lasting harm to the animal.

Learning Outcomes

Trainees should be able to:

8.1. Select and explain the best methods for common procedures (such as blood sampling and application of substances) including route/volume/frequency as appropriate.

8.2. Demonstrate that (s)he can handle and restrain the animal in the best position for the technique.

8.3. Perform minor techniques under supervision, in a manner that does not inflict unnecessary pain, suffering, distress or lasting harm.