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| **Day** | **Time** | **Module** | **Teacher** | **Learning Objectives** |
| 25  SEP  2017 | 9:30  10:00 | **Reception** | Paula Mota Susana Barroso | * 1. Welcome;   2. Introduction to the Modular structure training according to 2010/63/EU Directive.” |
| 10:00  11:15 | **Module 1**  - National and EU Legislation | Ana Paula Martins (DGAV) | 1.1 Identify and describe the national and EU laws and guidance which regulate the scientific use of animals and in particular the activities of those carrying out scientific procedures involving them.  1.2 Identify and describe related animal welfare legislation.  1.3 Describe the authorisation that is needed before acting as user, breeder or supplier of laboratory animals and especially the authorisation required for projects and where applicable individuals.  1.4 List sources of information and support that are available (regarding national legislation).  1.5 Describe the role of the personnel mentioned in Article 24, 25 and 26, and their statutory duties and other responsibilities under the National Legislation.  1.6 Describe the roles and responsibilities of the local animal welfare bodies and the national committee for the protection of animals used for scientific purposes.  1.12 Describe the legislative controls over the killing of animals bred or used for scientific procedures |
| 11:15  11:30 | Coffee Break |  |  |
| 11:30  12:15 | **Module 1**   * Procedure definition * Humane end point | To be defined | 1.7 Indicate who is responsible for compliance at an establishment and how this responsibility may be exercised (e.g. through the local AWB).  1.8 Describe when a procedure becomes regulated under National legislation (minimum threshold of pain, suffering, distress or lasting harm).  1.9 Indicate who bears primary responsibility for the animals undergoing procedures.  1.10 List which species, including respective stages of development that are included in the scope of the Directive / National law.  1.11 Indicate the circumstances in which animals under the scope of the Directive should be humanely killed or removed from the study to receive veterinary treatment. |
| 12:15  13:45 | Lunch Break |  |  |
|  | 13:45  15:45 | **Module 2**  - Ethics in animal research | To be defined | 2.1. Describe the differing views, within society, relating to the scientific uses of animals and recognise the need to respect these.  2.2. Describe the responsibility of humans when working with research animals and recognise the importance of having a respectful and humane attitude towards working with animals in research.  2.3. Identify ethical and animal welfare issues in their own work and be aware and able to reflect on the consequences of their own actions.  2.4. Recognise that compliance with ethical principles may contribute to the long-term trust and acceptance in scientific research from the general public.  2.7. Explain the Five Freedoms and how these apply to laboratory species  2.8. Describe the concept of harms to animals including avoidable and unavoidable suffering, direct, contingent and cumulative suffering  2.9. Describe the severity classification system, and give examples of each category. Describe cumulative severity and the effect this may have on the severity classification.  2.12. Describe the need for a culture of care and the individual’s role in contributing to this. |
|  | 15:45  16:00 | Coffee Break |  |  |
| 16:00  17:30 | **Module 2** The 3 R’s  * Reuse of animals in procedures * Animal welfare | Paula Mota | 2.5. Describe how the law is based on an ethical framework which requires 1) weighing the harms and benefits of projects (the harm/benefit assessment) 2) applying the Three Rs to minimise the harm, maximise benefits and 3) promote good animal welfare practices.  2.6. Describe and discuss the importance of the Three Rs as a guiding principle in the use of animals in scientific procedures.  2.10. Describe the regulations regarding re-use of animals.  2.11. Describe the importance of good animal welfare including its effect on scientific outcomes as well as for societal and moral reasons.  2.13. Describe relevant sources of information relating to ethics, animal welfare and the implementation of the Three Rs.  2.14. Be aware of different search tools (e.g. EURL ECVAM Search Guide, Go3Rs) and methods of search (e.g. Systematic reviews, meta analysis). |
| 26  SEP 2017 | 9:30  11:00 | **Module 3.1** Basic and appropriate biology of the rat and mouseHusbandry and welfare | Susana Barroso | 3.1.1. Describe basic anatomy, physiology, reproduction and behaviour of the relevant species.  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).  3.1.5. Describe the dietary requirements of the relevant animal species and explain how these can be met.  3.1.6. Describe the importance of providing an enriched environment (appropriate to both the species and the science) including social housing and opportunities for exercise, resting and sleeping. |
| 11:00  11:15 | Coffee Break |  |  |
| 11:15  12:00 | **Module 3.1**  - How husbandry and care may influence experimental outcome | Susana Barroso | 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 the place in the room influences the outcome, hence randomisation.  3.1.9. Maintain and interpret accurate, comprehensive records of animals held in the animal facility, including the wellbeing of the animals. |
| 12:00  13:00 | **Module 3.1**  - Different strains and genetically modified animals | João Peça | 3.1.7. When relevant to the species, recognise that there are different strains, and that these can have different characteristics which can affect both welfare and science.  3.1.8. When relevant to the species, recognise that alterations to the genome can affect the phenotype in unexpected and subtle ways, and the importance of monitoring such animals very carefully. |
| 13:00  14:30 | Lunch Break |  |  |
| 14:30  15:30 | **Module 4**  - Animal health and care, facility management  i) Facility management | Carmen Semião  Nuno Lima Tânia Ribeiro | 4.1. Describe suitable routines and husbandry practices for the maintenance, care and welfare for a range of animals used in research, to include small laboratory species and large animal species where appropriate.  4.2. Describe suitable environmental and housing conditions for laboratory animals, how conditions are monitored and identify the consequences for the animal resulting from inappropriate environmental conditions. |

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| 26  SEP 2017 |  | 1. Husbandry of rats and mice 2. Methods for marking individual animals | |  | | 4.5. Describe how the animal facility is organized to maintain an appropriate health status for the animals and the scientific procedures.  4.6. Describe how to provide water and an appropriate diet for 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 one or more named species for common scientific procedures.  4.8. Name different methods for marking individual animals and state an advantages and disadvantage for each method. | |
| 15:30  16:30 | **Module 4** Influence of the facility and husbandry on the physiology and health status of the mice and rats: Biosafety levels 1 to 4  1. Mice and rats transport 2. Zoonosis | | Susana Barroso | | 4.3. Recognise that changes to or disruption of circadian or photoperiod can effect animals.  4.4. Describe the biological consequences of acclimatisation, habituation and training  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, different containment levels use of sentinels as relevant to the species).  4.12. List the correct procedures for ensuring health, welfare and care of animals during their transport.  4.13. List potential human health hazards associated with contact with laboratory animals (including allergy, injury, infection, and zoonosis) and how these can be prevented. | |
| 16:30  16:45 | Coffee Break | |  | |  | |
| 16:45  17:30 | **Module 4**   * Breeding programmes   Reproduction and husbandry  of genetically altered animals | | João Peça | | 4.10. Describe appropriate breeding programmes.  4.11. Describe how genetically altered animals can be used for scientific research and the importance of monitoring such animals very carefully. | |
| 27  SEP 2017 | 9:30  11:00 | **Module 5**  - Recognition of pain, suffering or distress | | Paul  Flecknell | | 5.1. Recognise normal or desirable behaviour and appearance of the individuals in the context of species, 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 animals e.g. score sheets.  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. | |
| 11:00  11:15 | Coffee Break | |  | |  | |
| 11:15  12:30 | - **Module 5**  - Recognition of pain, suffering or distress | | Paul Flecknell | | 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. | |
|  | 12:30  14:00 | | Lunch Break |  |  | |
| 14:00  15:30 | | **Module 6.1**  - Humane methods of killing | Paul Flecknell | 6.1.1. Describe the principles of humane killing (e.g. what constitutes ‘a good death’). | |
| 15:30  16:30 | | **Module 20**  - Anaesthesia for minor procedures  [Additional Task Specific Module for Functions A and B as required] | E-learning  Paula Mota | 20.1. Define sedation, local and general anaesthesia  20.2. Identify the three components of the triad of anaesthesia and understand that different anaesthetic agents produce these to different degrees.  20.3. Define balanced anaesthesia and indicate that this is best achieved by using drugs in combinations to achieve all components of the anaesthetic triad to an acceptable degree  20.4. Relate why and when sedation or anaesthesia might be used for restraint.  20.5. List the factors to be considered in pre-anaesthetic evaluation of animals - how to perform a basic health check, consider physiological or pathological status of the model they are working with and how these may influence the choice of anaesthetic agent.  20.6. Discuss the relative merits / drawbacks and principles of selection of different agents and their application, including calculation of doses, in relevant species, including injectable and volatile agents (or dissolved agents in the case of aquatic species), including local anaesthesia regimes | |
| 16:30  16:45 | | Coffee Break |  |  | |
| 16:45  18:00 | | **Module 20**  - Anaesthesia for minor procedures  [Additional Task Specific Module for Functions A and B as required] | E-learning  Paula Mota | 20.7. Indicate the importance of minimising stress prior to anaesthesia in reducing the likelihood of complications due to anaesthesia.  20.8. Recognise when premedication is beneficial to incorporate into an anaesthetic regime.  20.9. Describe and demonstrate the correct set-up, operation and maintenance of anaesthetic equipment appropriate to the species concerned.  20.10. Evaluate and appreciate the different levels and planes of anaesthesia (voluntary excitement, involuntary excitement, surgical anaesthesia (light, medium & deep), excessively deep).  20.11. List the factors indicating that an animal is suitably anaesthetized (stable and of appropriate depth) to enable procedures to be undertaken and what actions should be taken if an adverse event occurs. This will include basic “hands on” and “observational” anaesthetic monitoring techniques, including assessment of reflexes appropriate for species.  20.12. Describe methods of optimising post anaesthetic recovery (e.g. heat blankets, analgesia, reversal agents, access to food and water, environmental conditions) to ensure a smooth and rapid recovery from anaesthesia.  20.13. Demonstrate an understanding of safe / good working practices with regard to use, storage and disposal of anaesthetic and analgesic agents. | |

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| 28  SET 2017 | 9:00  10:30 | **Module 21:** Advanced anaesthesia for surgical or prolonged procedures [Additional Task Specific Module] | Paul Flecknell | 21.1. Relate why and when anaesthesia might be used, including additional factors relevant for long term anaesthesia.  21.2. Relate the need for and list the factors to be considered in pre-anaesthetic evaluation of animals, including acclimatisation.  21.3. Discuss the use of pre-anaesthetic agents and analgesics as part of a balanced anaesthetic regime.  21.4. Indicate that a range of drugs are commonly used for premedication and the induction and maintenance of anaesthesia in relevant laboratory species, and identify where to get advice on the different drug available and their use.  21.5. Describe how an animal’s concurrent pathology may require specific anaesthetic regimen,  Monitoring or nursing care.  21.6. Indicate types of agents used for the induction and maintenance of general anaesthesia, their advantages and disadvantages and when each might be used.  21.7. Describe how anaesthetic agents interact to produce the three components of the anaesthetic triad to different degrees, and how balanced anaesthesia might be best achieved by using combinations.  21.8. Demonstrate a sufficient understanding of anaesthetic agents having a low analgesic effect, potentially requesting the use of an additional analgesia. |
| 10:30  10:45 | Coffee Break |  |  |
| 10:45  12:15 | **Module 21:** Advanced anaesthesia for surgical or prolonged procedures [Additional Task Specific Module] | Paul Flecknell | 21.9. List the factors to be considered when monitoring anaesthesia both for anaesthetic depth and physiological stability. Indicate how to determine that an animal is sufficiently deeply anaesthetised to enable painful procedures to be undertaken, and what action should be taken if an adverse event occurs.  21.10. List methods which can used to assist monitoring of anaesthesia (e.g. ECG, BP, Urine output, Oxygen saturation, CO2) and how these can be monitored.  21.11. Monitor anaesthetic depth and the animals' vital signs, using both clinical signs, and electronic apparatus if appropriate.  21.12. Describe and demonstrate the correct set-up, operation and maintenance of anaesthetic and monitoring equipment appropriate to the species concerned.  21.13. Demonstrate competence in maintaining and interpreting records of pre- and post- anaesthetic induction and whilst an animal is anaesthetised, as well as in managing the animal care adequately  21.14. Indicate the problems that may occur during anaesthesia, and understand how to avoid these, or manage them if they occur.  21.15. Demonstrate an understanding of mechanical ventilation. |
| 12:15  13:30 |  |  |  |
| 13:30  15:30 | **Module 21:** Advanced anaesthesia for surgical or prolonged procedures [Additional Task Specific Module] | Paul Flecknell | 21.16. Describe methods to optimise post anaesthetic recovery to ensure a smooth and rapid recovery from anaesthesia, as in Basic Module but with additional methods required, including analgesia and fluid replacement, for animals having undergone lengthy anaesthesia of surgical procedure.  21.17. Consider the consequences of anaesthesia and the surgical procedures on recovery.  21.18. Appreciate how the choice of anaesthetic agent will determine the rate of recovery and describe how duration and quality of anaesthesia governs the rate of recovery.  21.19. Describe the problems that can arise (in the post-operative period), and indicate how to avoid these, or manage them if they occur.  21.20. Discuss how to integrate a program of pain management into an overall scheme of perioperative care.  21.21. Indicate some of the problems associated with pain recognition and pain management in animals.  21.22. Demonstrate a sufficiently detailed understanding of analgesics to be able to administer safely, including routes of administration and potential adverse effects.  21.23. Demonstrate an understanding of safe / good working practices with regard to use, storage and disposal of anaesthetic and analgesic agents. |
|  | 15:30  15:45 | Coffee Break |  |  |
| 15:45  17:45 | **Module 7**  Module 7: Minimally invasive procedures without anaesthesia (Function A ) | Susana Barroso | 7.1. Describe appropriate methods and principles to be followed when handling animals (including methods of manual 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 socialisation of animals.  7.4. Describe techniques/procedures including, for example, injection, sampling and dosing techniques (routes/volumes/frequency), dietary modification, gavage, tissue biopsy, behavioural tests, use of metabolic cages.  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 animals 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 the species concerned and describe how these can be minimised. |
| 29  Set  2017 | 9:00  11:00 | **Module 3.2**  - Basic and appropriate biology of the mouse and the rat  (Practice)  (Function A and C) | Carmen Semião Sandra Freire Mónica  Tânia Ribeiro Nuno Lima Fátima Martins  Paula Mota  Susana Barroso  Alexandre Santos | 3.2.1. Be able to approach, handle/pick up and restrain an animal and return it to its cage/pen in a calm, confident and empathetic manner such that the animal is not distressed or caused harm. |
| 11:00  11:15 | Coffee Break |  |  |
| 11:15  12:45 | **Module 8**  Minimally invasive procedures without anaesthesia in mouse and rats (administration of substances) (skills) [Specific for Function A] | Paulo Matafome  Tânia Ribeiro Nuno Lima  Nuno Fonseca Mafalda Laranjo  Ana Duarte Margarida Abrantes | 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. |
| 12:45  14:15 | Lunch Break |  |  |

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|  | 15:30  16:30 | **Module 9**  - Ethics, animal welfare and the Three Rs (level 2) [Specific for Function B] | Paula Mota | 9.1. Understand that there is a broad range of ethical, welfare and scientific perspectives on the use of animals in scientific procedures, and that thinking on all of these matters evolves over time and is influenced by culture and context.  9.2. Understand that this means there is need for on-going critical evaluation of the justification for using animals and of implementation of the Three Rs at all stages of the life of a project.  9.3. Recognise that there are ethical limits to what it is considered permissible to do under the Directive and that even within these legal constraints, there are also likely to be national and institutional differences in this respect.  9.4. Explain that legislation requires that the justification for programmes of work is assessed by weighing potential adverse effects on the animals against the likely benefits; that harms to animals must be minimised, and benefits maximised. |
| 16:30  16:45 | Coffee Break |  |  |
| 16:45  18:30 | **Module 9**   * Ethics, animal welfare and the Three Rs (level 2) [Specific for Function B] | Paula Mota | 9.5. Understand and provide the information necessary to enable a robust harm/benefit assessment to be performed; and explain why they personally consider that the potential benefits outweigh the likely adverse effects.  9.6. Understand the need to communicate appropriate information to a wider public audience, and be able to prepare an appropriate non-technical project summary to facilitate this.  9.7. Describe the importance of disseminating information that will promote understanding of ethical issues, good animal welfare, good science and application of the Three Rs. |
| 2  OUT 2017 | 9:30  11:00 | **Module 10 -**Design of procedures and projects (level 1)  (Specific for Function B) | Francisco Caramelo | 10.1. Describe the concepts of fidelity and discrimination (e.g. as discussed by Russell and Burch and others).  10.2. Explain the concept of variability, its causes and methods of reducing it (uses and limitations of isogenic strains, outbred stocks, genetically modified strains, sourcing, stress and the value of habituation, clinical or sub-clinical infections, and basic biology).  10.3. Describe possible causes of bias and ways of alleviating it (e.g. formal randomisation, blind trials and possible actions when randomisation and blinding are not possible).  10.4. Identify the experimental unit and recognise issues of non-independence (pseudo- replication). |
| 11:00  11:15 | Coffee Break |  |  |

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| 2  OUT 2017 | 11:15  12:30 | **Module 10**  Design of procedures and projects (level 1)  (Specific for Function B) | Francisco Caramelo | 10.5. Describe the variables affecting significance, including the meaning of statistical power and  “p-values”.  10.6. Identify formal ways of determining of sample size (power analysis or the resource equation method).  10.7. List the different types of formal experimental designs (e.g. completely randomised, randomised block, repeated measures [within subject], Latin square and factorial experimental designs).  10.8. Explain how to access expert help in the design of an experiment and the interpretation of experimental results |
| 12:30  14:00 |  |  |  |
| 14:00  16:00 | **Module 20-**  Anaesthesia  Practice | Tânia Ribeiro Nuno Lima Paula Mota Susana Barroso Mafalda Laranjo Margarida Abrantes  Paulo Matafome | -Simple induction process (e.g. chamber induction or simple IP administration),  -Basic “hands on” and “observational” monitoring of anaesthetic depth; maintenance is anticipated to be uncomplicated at a stable anaesthetic depth and maintenance rate.  - Brief duration (up to about 15 minutes in rodents)  - Maintenance of anaesthesia for imaging  -Use for minor procedures only - non-invasive / superficial procedures only (skin level, no access to body cavities unless terminal anaesthesia is used), superficial venous access and taking a blood sample, identification using SC microchip or, tail tipping (limited biopsy of tip of tail),  -Anaesthesia for restraint. |
| 16:00  16:15 | Coffee Break |  |  |
| 16:15  17:15 | **Module 6.1 e**  **6.2**  -Humane methods of killing (theory and skills)  (Function A; B and C) | Fátima Martins  Nuno Lima  Paula Mota Susana Barroso Raquel Santiago (Perfusion) | 6.1.2. Describe the different methods by which the relevant animals 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 animals should be available at all times (whether care staff or person carrying out procedures)  6.2.1. Proficiently and humanely carry out euthanasia using appropriate techniques on relevant species of laboratory animals  6.2.2. Demonstrate how death is confirmed and how cadavers should be processed or otherwise disposed of. |
| 17:15  18:00 | Necropsy -Function A and B | Paula Mota Susana Barroso | General anatomy |
| 3  OUT 2017 | 9:30  11:00 | **Module 11**  Design of procedures and projects (level 2) [Function B] | Paula Mota  Catarina Oliveira  Filomena Botelho | (i) Legal issues  11.1. Describe in detail the main components of the national legislation regulating the scientific use of animals; in particular, explain the legal responsibilities of those designing procedures and projects (Function B staff) and those of other persons with statutory responsibilities under the national legislation (e.g. the person responsible for compliance, veterinarian, animal care staff, training officers).  11.2. List the key purposes of other relevant EU and international legislation and associated guidelines that impact on the welfare and use of animals. This includes Directive 2010/63/EU and legislation/guidelines relating to: veterinary care, animal health, animal welfare, genetic modification of animals, animal transport, quarantine, Health & Safety, wildlife and conservation.  (ii) Good scientific practice  11.3. Describe the principles of a good scientific strategy that are necessary to achieve robust results, including the need for definition of clear and unambiguous hypotheses, good experimental design, experimental measures and analysis of results. Provide examples of the consequences of failing to implement sound scientific strategy.  11.4. Demonstrate an understanding of the need to take expert advice and use appropriate statistical methods, recognise causes of biological variability, and ensure consistency between experiments.  11.5. Discuss the importance of being able to justify on both scientific and ethical grounds, the decision to use living animals, including the choice of models, their origins, estimated numbers and life stages. Describe the scientific, ethical and welfare factors influencing the choice of an appropriate animal or non-animal model.  11.6. Describe situations when pilot experiments may be necessary.  11.7. Explain the need to be up to date with developments in laboratory animal science and technology so as to ensure good science and animal welfare.  11.8. Explain the importance of rigorous scientific technique and the requirements of assured quality standards such as GLP.  11.9. Explain the importance of dissemination of the study results irrespective of the outcome and describe the key issues to be reported when using live animals in research e.g. ARRIVE guidelines. |

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| 3  OUT 2017 | 11:00  11:15 | Coffee Break |  |  |
| 11:15  12:30 | **Module 11**  Design of procedures and projects (level 2) [Function B] | Paula Mota | (iii) Implementing the Three Rs  11.10. Demonstrate a comprehensive understanding of the principles of replacement, reduction and refinement, and of how these ensure good science and good animal welfare.  11.11. Explain the importance of literature and internet searches, discussion with colleagues and  with relevant professional bodies in identifying opportunities for applying each ‘R’  11.12. Describe relevant sources of information relating to ethics, animal welfare and the implementation of the Three Rs.  11.13. Explain how to use different search tools (e.g. EURL ECVAM Search Guide, Go3Rs) and methods of search (e.g. Systematic reviews, meta-analysis).  11.14. Describe examples of alternative methods and research strategies that replace, avoid or complement the use of animals in different types of research programme.  11.15. Identify, assess and minimise all of the welfare costs to animals throughout the animals’ lifetime (including adverse effects relating to sourcing, transport, housing, husbandry, handling, procedures and humane killing); Explain and give examples of welfare assessment protocols.  11.16. Define and apply appropriate humane end-points; establish suitable criteria to identify when the humane endpoint has been reached  11.17. Describe possible conflicts between Refinement and Reduction (e.g.in the case of re-use) and the factors that need to be considered to resolve this conflict  11.18. Define the requirements for, and controls on, re-homing of animals; identify any relevant re-homing guidelines  (iv) Responsibilities  11.19. Explain the need to be aware of local arrangements relating to project licence management,  E.g. procedures for ordering animals, accommodation standards, disposal of animals, safe working practices and security, and the actions to take in the event of unexpected problems arising with any of these. |

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| 3  OUT 2017 | 12:30  14:00 | Lunch Break |  |  |
| 14:00  16:15 | **Module 20**  - Anaesthesia  Practice | Tânia Ribeiro Nuno Lima Paula Mota Susana Barroso Mafalda Laranjo Margarida Abrantes  Paulo Matafome | Simple induction process (e.g. chamber induction or simple IP administration),  -Basic “hands on” and “observational” monitoring of anaesthetic depth; maintenance is anticipated to be uncomplicated at a stable anaesthetic depth and maintenance rate.  - Brief duration (up to about 15 minutes in rodents)  - Maintenance of anaesthesia for imaging  -Use for minor procedures only - non-invasive / superficial procedures only (skin level, no access to body cavities unless terminal anaesthesia is used), superficial venous access and taking a blood sample, identification using SC microchip or, tail tipping (limited biopsy of tip of tail),  -Anaesthesia for restraint. |
| 16:00  16:15 | Coffee Break |  |  |
| 16:15  17:15 | **Module- 6.1 e**  **6.2** - **Humane methods of killing (theory and skills)- Function A,B and C** | Fátima Martins  Nuno Lima Paula Mota Susana Barroso  Raquel Santiago  Joana Martins  Inês Aires | 6.1.2. Describe the different methods by which the relevant animals 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 animals should be available at all times (whether care staff or person carrying out procedures).  6.2.1. Proficiently and humanely carry out euthanasia using appropriate techniques on rats and mice.  6.2.2. Demonstrate how death is confirmed and how cadavers should be processed or otherwise disposed of. |
| 17:15  18:00 | Necropsy (Function A e B) | Paula Mota Susana Barroso | * General anatomy |
| 4  OUT 2017 | 9:30  11:00 | **Module 22**  - Principles of surgery  [Functions A and B as required] | Susana Barroso | 22.1.Explain the relevance and need for pre-operative assessment and, where appropriate, conditioning.  22.2.Identify sources of reference for good surgical practice  22.3.Describe the process of tissue healing and relate to this to the importance of asepsis and hygienic practices, wound creation, the principles of tissue handling and selection of a suitable surgical approach  22.4.Discuss possible causes of delayed or impaired wound healing or other post-surgical complications and describe ways in which these can be avoided or, if they occur, treated  22.5.Describe in general terms how personnel, animals, instruments and equipment should be prepared for aseptic surgery  22.6.List the principles of successful surgery (e.g. Halstead’s principles) and indicate how to achieve these  22.8. Relate the importance of good technique in accessing surgical sites, handling tissues and repairing incisions |
| 11:00  11:15 | Coffee Break |  |  |
| 11:15  12:30 | **Module 22**  - Principles of surgery  [Functions A and B as required] | Susana Barroso | 22.7. Describe the characteristics of different, commonly-used instruments, suture materials and needles  22.9. Indicate the characteristics of different suture patterns and their applicability to different situations  22.10. Demonstrate how to place a suture correctly  22.11. Describe common post-surgical complications and their causes  22.12. Relate the principles of post-surgical care and monitoring  22.13. Describe the planning of surgical procedures and discuss the competencies required of all  personnel involved  22.14. Demonstrate competence in surgical techniques, including ablations and incisions and their closure by methods appropriate to the tissue concerned  22.15. Describe particular aspects of care appropriate for animals before, during and after surgical or any other potentially painful intervention |

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| 3  OUT 2017 | 12:45  14:00 | Lunch Break |  |  |
| 14:00  16:00 | **Module 21 e 22**   * Practice of surgery and anaesthesia  Microelectrodes implantation on the brain  * SC Alzet pump and cannula implantation * Spaying and castration technique * Eye surgery * Exploratory laparotomy * Imagiology | Ana Duarte Paula Mota  Margarida Abrantes  Pedro Vaz  Susana Barroso  José Sereno  Joana Martins  Inês Aires | -Anaesthesia plan for rodents according to the surgery  - Animal observation and premedication  - Anaesthesia induction (inhalation or IV);  - monitoring anaesthesia depth by clinical signs and with electronic meters;  -Maintenance of anaesthesia in the surgery.  22.13. Describe the planning of surgical procedures and discuss the competencies required of all personnel involved  22.14. Demonstrate competence in surgical techniques, including ablations and incisions and their closure by methods appropriate to the tissue concerned  22.15. Describe particular aspects of care appropriate for animals before, during and after surgical or any other potentially painful intervention |
| 16:00  16:15 | Coffee Break |  |  |
| 16:15  17:30 | **Module 21 e 22**   * Practice of surgery and anaesthesia  Microelectrodes implantation on the brain  * SC Alzet pump and cannula implantation * Spaying and castration technique * Eye surgery * Exploratory laparotomy * Imagiology | Ana Duarte Paula Mota  Margarida Abrantes  Pedro Vaz  Susana Barroso  José Sereno  Joana Martins  Inês Aires | -Anaesthesia plan for rodents according to the surgery  - Animal observation and premedication  - Anaesthesia induction (inhalation or IV);  - monitoring anaesthesia depth by clinical signs and with electronic meters;  -Maintenance of anaesthesia in the surgery.  22.13. Describe the planning of surgical procedures and discuss the competencies required of all personnel involved  22.14. Demonstrate competence in surgical techniques, including ablations and incisions and their closure by methods appropriate to the tissue concerned  22.15. Describe particular aspects of care appropriate for animals before, during and after surgical or any other potentially painful intervention |
|  | 10:00  11:00 | **Modules 10 e**  **11**  - Practice  (Function B) | Paula Mota  Susana Barroso | - Submission of a Project to ORBEA- group work |
| 11:00  11:15 | Coffee Break |  |  |
| 11:15  12:30 | **Modules 10 e**  **11**  - practices  (Function B) | Paula Mota  Susana Barroso | - Submission of a Project to ORBEA- group work |
| 6 OUT  2017 |
| 12:30  14:00 | Lunch break |  |  |
| 14:00- 15:30 | EXAM |  |  |
| 16:00  16:15 | Coffee Break |  |  |
| 15:45- 18:30 | **Modules10 and 11** | Susana Barroso  Paula Mota | Group work presentation |