SAVC DAY 1 SKILLS FOR THE LABORATORY ANIMAL TECHNOLOGIST

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NOTE: the definition of competency is based on the South African Qualifications Authority (SAQA) definition which is threefold and comprises:
- Practical competency (skills*)
- Foundational competency (knowledge)
- Reflexive competency (adaptability)

*SKILLS: Developed through the Intermediate Apprenticeship of Animal Technology, Venture Forward (UK) (SA equivalent)

1. Generic competencies, personal learning and thinking skills*

1.1. Communication
1.1.1. Communicate effectively using visual, mathematical and/or language skills* using verbal and/or written presentation.
1.1.2. Communicate effectively with staff, researchers, students, the public, colleagues and authorities

1.2. Participation
1.2.1. Effectively and constructively participate by joining in, becoming involved, and taking a constructive and active part with others

1.3. Team Work
1.3.1. Work effectively with others as a member of a departmental team, research team, organisation, or community.

1.4. Self-Management
1.4.1. Accept accountability and responsibility for one’s own actions
1.4.2. Organise and manage oneself and one's activities responsibly and effectively
1.4.3. Ensure that your work area/office space is maintained in a tidy, clean, hygienic and conditions
1.4.4. Ensure that all paperwork is managed in a tidy, clean, up to date and well filed system
1.4.5. Ensure that all computer files are managed and up to date in a well filed system
1.4.6. Ensure that all data is recorded immediately and legibly in accordance with the principles of Good Laboratory Practice and Raw Data Management. That all data is valid, reliable, authentic and sufficient
1.4.7. Ensure that performance is efficient and effective at all times
1.4.8. Ensure that all work is undertaken in compliance with local Standard Operating Procedures, organisational Policy and Procedure, National Standards and Legislation

1.5. Independent enquiry
1.5.1. Collect, analyse, organise and critically evaluate information.

1.6. Creative thinking and reflective learning
1.6.1. Identify and solve problems in which where the responses demonstrate that responsible decisions using critical and creative thinking have been made.
1.6.2. Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.
1.6.3. Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
1.6.4. Is committed to personal career development, maintaining competence and continuous professional learning (CPD)

2. Functional skills*
2.1. Mathematics Grade 10 or equivalent
2.2. English Grade 10 or equivalent
2.3. Computer technology skills* Grade 10 or equivalent

3. Maintain personal hygiene, health and safety and security
3.1. Select and use the personal protective equipment (PPE) provided, which are appropriate to your daily routine or to the specific task you are performing
3.2. Behave in a way which minimises the risk to yourself and others
3.3. Use equipment and chemical in accordance with manufacturers’ instructions
3.4. Adhere to organisational health and safety regulations, procedures and policies
3.5. Be aware of what to do in the case of a breach of security / fire / medical incident / accident; report the procedure immediately
3.6. Take precaution against the transmission of disease; zoonosis
3.7. Maintain security of the workplace
3.8. Dispose of various types of waste material (hazardous, toxic, biological, medical, biohazardous) immediately and safely
3.9. Deal with any chemical spillage safely and appropriately; report the incident
4. **Handle, move and restrain animals**

4.1. Wear the necessary protective clothing
4.2. Determine the location and the animal to be moved
4.3. Approach animals calmly, quietly and confidently
4.4. Identify the sex of the animal(s)
4.5. Identify the animal(s)
4.6. Carefully remove the animal(s) using correct handling techniques
4.7. Remove / replace any cage labels, ensuring information is correct
4.8. Ensure the new accommodation is appropriate: observe the animal(s) behaviour; especially when re-grouping the animals
4.9. Record date and sign for tasks
4.10. Be able to remove the animal (firstly ensuring its identification) and be able to apply appropriate, gentle and safe restraint, such as to assist in a minor procedure
4.11. Be able to use acceptable and appropriate restraint equipment to gently and safely restrain the animal
4.12. Record date and sign for tasks

5. **Dispatch, transport and receipt of animals**

5.1. Check the details on the animal request form
5.2. Check research protocol number for animals dispatched for research
5.3. Confirm the animals are available
5.4. Arrange for collection
5.5. Prepare the correct transport boxes, including bedding and transport medium
5.6. Move animals carefully to transport box, avoid mixing sexes and mixing incompatible groups of animals in one box
5.7. Ensure the transport boxes are secured
5.8. Complete all the necessary paperwork, the final dispatch form should be signed by the HOD
5.9. Use reliable and fit for purpose transport for the animals
5.10. Pre-prepare appropriate animal accommodation
5.11. Upon receipt of the animals, check all the details on the delivery paperweight
5.12. Remove the animals one by one from the transport box into the new accommodation
5.13. Check for signs of discharge in the transport box; check each animal for any injuries, or signs of ill health. Report any problems immediately.
5.14. Provide the new arrivals with fresh water and diet immediately
5.15. Complete the animal arrival paperwork
5.16. Assist with the dispatch, transport and receipt of large animals, including game animals

6. **Receipt, storage and providing bedding / nesting material; food and water to animals**

6.1. Monitor and manage the storage conditions of animal diet and report any problems, both in the storage and in the storage bins
6.2. Receive newly delivered diet / bedding. Check details of diet type and quantity. Check condition of diet / bedding bags and report any problems, such as mould or pest infestation.
6.3. Handle diet bags so as not to cause damage and ensure rotation of diet in store. Record batch number deliveries, maintain stock records, including delivery date and your signature

6.4. Ensure you select the correct diet / bedding material for the species of animal

6.5. Ensure there is always sufficient good quality diet provided for the number of animals in the cage / pen

6.6. Ensure there is always sufficient good quality clean bedding provided for the number of animals in the cage / pen

6.7. Ensure there is always sufficient clean, fresh water provided for the number of animals in the cage / pen

6.8. Monitor and maintain clean and fit for use of all feeding and watering equipment

6.9. Note and report any changes in the feeding / drinking habits of the animals

6.10. Note when conducting a cage clean, and report any abnormalities such as the presence of blood, diarrhoea

6.11. Dispose of waste food and bedding correctly

6.12. Be able to monitor and record and calculate food and / or water consumption

7. Care, husbandry and hygiene of laboratory animals

7.1. Wear appropriate personal protective equipment; take appropriate health and safety precautions for yourself and others

7.2. Preparation of clean animal accommodation in accordance with that particular species. Including appropriate bedding and environmental enrichment materials.

7.3. Animal accommodation should include various types of rodent caging, rabbit caging, large animal pens and specialised caging such as internally ventilated gages (IVCs)

7.4. Prepare and check fixtures and fittings such as food hoppers, water bottles, and water bowls

7.5. Moving animals from soiled accommodation to clean accommodation, including the use of cage changing stations

7.6. Use correct and safe handling techniques appropriate to the species

7.7. Ensure any cage labels are correctly transferred and securely attached to clean accommodation

7.8. Ensure the animals are secure in their clean accommodation and observe that they are displaying normal behaviour

7.9. Ensure the recommended stocking density for the species and the size of cage are not exceeded (South African National Standards (SANS) 10386:2008)

7.10. Discard all waste in an appropriate manner

7.11. Removing soiled caging material, hoppers, water containers, environmental enrichment objects in an appropriate manner to the correct location for sanitisation

7.12. Sanitise / disinfect / sterilise working area, including animal room floors as appropriate once cage changing has been completed

7.13. Routinely and appropriately wash / disinfect / sterilise all animal room accommodation, food hoppers, water bottles and environmental enrichment equipment. Including use of specialised equipment and chemicals

7.14. Routinely and appropriately wash / disinfect / sterilise all animal cage racking

7.15. Record the time and sign for completion of all tasks

8. Monitor and maintain the health and welfare of laboratory animals

8.1. You have a legal and moral responsibility to these animals at all times
8.2. Maintain the health and welfare of animals in your care at all times


8.4. Check twice daily for identify for any deaths (mortality check)

8.5. Dispose of the carcass according to recommended guidelines

8.6. Record any deaths, date and sign; and know to whom to report such problems

8.7. Care for the animals in a way which is likely to lead to meaningful and accurate scientific research results OR efficient breeding programmes

8.8. Recognise potential hazards to the animals, take appropriate action and suggest ways to make improvements in animal care and welfare

8.9. By observing the various species of laboratory animal(s), undisturbed, housed singly or in a group, and be able to recognise the difference between normal behaviour and abnormal behaviour.

8.10. Record observations, date and sign; and know to whom to report such problems

9. **Check the physical condition of a laboratory animal by performing a full systematic clinical observation**

9.1. To be able to recognise what is not normal in an animal you must be familiar with what is normal for each species

9.2. Check the animal accommodation for signs of blood or other discharge

9.3. Regularly check the physical condition of the animal

9.4. Regularly monitor and record the body weight of each animal

9.5. Be able to create a growth curve

9.6. Record, date, time and sign

9.7. Know who to report any serious deviations from normal and do so immediately

9.8. According to recommended guidelines, restrain the animal safely and securely, minimising stress to the animal

9.9. Using a systematic process (from tip of nose to tip of tail) to examine the animal thoroughly

9.10. Know who to report any deviations from normal and do so immediately

9.11. It may also be necessary to check other clinical parameters such as body temperature.

9.12. Record, date, time and sign

9.13. Know who to report any deviations from normal and do so immediately

9.14. Be able to recognise common laboratory animal diseases and report to veterinarian

10. **Animal room and barrier management**

10.1. Constant management of animal room cleanliness, hygiene and disinfection, maintaining optimal animal room sanitisation at all times

10.2. Be able to sanitise and disinfect an animal room; using specialised equipment, and appropriate chemicals

10.3. Assist with animal room sterilisation

10.4. Maintain the integrity of the animal room barrier at all times

10.5. Use the correct procedures at all times, prior to entry / exit from any animal room

10.6. Use the correct procedures for entry / exit of materials across the barrier

10.7. Daily monitoring and recording of air pressure differentials

10.8. Recognition of an emergency that may affect the integrity of the barrier, and reporting it immediately. Record problem.
10.9. Daily monitoring and recording of animal room environmental parameters, including room temperature, relative humidity and differential air pressures
10.10. Where the animals’ direct accommodation environment may differ from the room environments, such as in IVCs, monitor and record the cage environment
10.11. Record and sign for these environmental parameters
10.12. Where animal room or direct animal accommodation environment parameters fall outside of acceptable recommended limits, know how to record this, and to whom to report any problems (South African National Standards (SANS) 10386:2008).
10.13. Routinely monitor and record light cycles, light density, ventilation rates

11. Ancillary animal facility areas
11.1. Ancillary areas include all areas in the animal facility which are not animal rooms
11.2. Ensure that clean and dirty items are kept separate and stored correctly
11.3. Ensure that all these areas are maintained in a tidy, clean and sanitised condition at all times; especially at the end of each working day.
11.4. Ancillary areas include, Inter alia, entrance and exit lobbies (for staff and goods), waste areas, showers, toilets, store rooms, cage and bottle wash areas, corridors, tea room and office

12. Animal identification
12.1. Be aware of animal the various identification methods of laboratory animals and their use in various species
12.2. Be able to apply non-invasive animal identification such as non-toxic dyes, use of coat colouring
12.3. Assist with the application of invasive animal identification such as ear notching and micro-chips
12.4. Be able to correctly identify an animal from the various methods that may be used for identification in various species
12.5. Be able to correctly identify animal accommodation

13. Laboratory animal breeding
13.1. Assist with the management of simple breeding programmes
13.2. Prepare accommodation conditions suitable for breeding
13.3. Select breeding animals as per instructions
13.4. Monitor and maintain animal care and husbandry without unduly disturbing the animals; provide nesting material when female is close to parturition
13.5. Make up breeding groups as per instructions
13.6. Assist with palpating for pregnancy
13.7. Monitor and record animal health during pregnancy
13.8. Observe breeding animals twice daily without undue disturbance
13.9. Record observations, report any problems
13.10. Record the date of birth and the number of animals born
13.11. Record breeding data as per instructions
13.12. Care for the mother and the young
13.13. Wean and correctly sex animals at appropriate age as per instructions
13.14. Ensure all records and cage labelling are up to date and correct on a daily basis
13.15. Provide assistance during parturition in large animals
14. **Prepare environment for laboratory animal procedures**

14.1. Ensure environment is prepared to correct state of cleanliness, disinfection, sterilisation (depending on procedure)

14.2. Prepare equipment and materials for the procedure

14.3. Ensure personal hygiene and personal protective equipment

14.4. Assist others to prepare for procedure (such as gowning)

14.5. Dispose of any waste / spillage correctly

14.6. Return the equipment and material to the correct location

14.7. Sanitise equipment and material after use

14.8. Restore the environment to its original state of cleanliness following the procedure

15. **Prepare laboratory animals for procedures**

15.1. Ensure the correct animal is selected for the procedure

15.2. Restrain the animal safely and with care

15.3. Prepare the animal for behavioural studies, non-invasive procedures, aseptic procedures and surgery

15.4. Withholding food and water

16. **Perform laboratory animal procedures**

16.1. Assist with / perform under supervision the enteral and parenteral administration of medicines, experimental and other substances, including by oral gavage, inhalation and injection (including subcutaneous, intramuscular, intravenous, intraperitoneal, intradermal)

16.2. Assist with / perform under supervision the collection and processing of samples, including blood, body fluids, saliva, ascites, urine by free flow and faeces; and the collection of tissues including smears, vaginal smears, impression smears, skin scrapings, post mortem samples and swabs for diagnostic and experimental purposes, but excluding the collection of internal organs by biopsy

16.2.1. Assist with / perform under supervision the euthanasia of animals, including by physical (e.g. pithing, decapitation, cervical dislocation) and other methods, appropriate to the particular species and in accordance with regulations and confirmation of death (South African National Standards (SANS) 10386:2008).

16.3. Dispatching animals for necropsy

17. **Maintenance of equipment and stores**

17.1. Maintain all equipment clean and in working condition at all times

17.2. Ensure correct servicing, maintenance and calibration of all equipment and animal room services

17.3. Ensure that all servicing, maintenance and calibrations are recorded and records maintained in up to date and in order

17.4. Ensure that animal diet, consumables are ordered timeously

17.5. Maintain a record of all stores

17.6. Maintain all storage areas tidy and clean

[Council: 8 – 9 March 2016]