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Document Title: <b>WORK INSTRUCTION FOR ANIMAL SCIENCES PRACTICAL SESSIONS</b>		

# CHUKA UNIVERSITY

## WORK INSTRUCTION


### FOR

### ANIMAL SCIENCE PRACTICAL SESSIONS (CU/WI/ANSC/08)

#### DOCUMENT REVIEW SHEET

The signatures below certify that this Work Instruction (WI) has been reviewed and accepted, and demonstrate that the signatories are aware of all the requirements contained herein and are committed to ensuring their provision.

<b>Name</b>	<b>Signature</b>	<b>Date</b>
<b>Reviewed By: ANSC TECHNOLOGISTS</b>		30.9.2017
<b>Controlled By: CHAIRPERSON OF DEPARTMENT</b>		30.9.2017
<b>Approved By: DEAN</b>		30.9.2017

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### 1.0 AMENDMENT RECORD SHEET

DATE	ISSUE NO.	REVISION NO.	PAGE NO.	SUBJECT OF REVIEW /MODIFICATION	REVISED BY	APPROVED BY

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## 2. GENERAL

### 2.1 Purpose

The purpose of this work Instruction is to ensure that animal science laboratory procedures are followed for proper implementation and safety of the workers and the environment.

### 2.2 Scope

This work instruction applies to animal science laboratory practicals.

### 2.3 References

1. ISO 9001:2015 Clause =====
2. Quality Manual
3. Manuals for operation of various laboratory apparatus and equipment

### 2.4 Definitions and Abbreviations

#### Definitions


In addition to the relevant common definitions of terms given in ISO 9000:2005, the following specific definitions shall apply:

#### Abbreviations

**AMR:** Assistant Management Representative  
**MR:** Management Representative  
**QMS:** Quality Management System  
**WI:** Work Instruction  
**BSL:** Biosafety Level

### 2.5 Responsibility

The COD has the principal responsibility for ensuring that this work instruction remains adequate for its intended purposes.

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### 3. STANDARD OPERATING PROCEDURES

#### 1. Standard Operating Procedures

#### TITLE: Booking/Allocation for Laboratory Practicals

##### Input

1. Human resource- Lecturer, technologists
2. Laboratory manual
3. Personal Protective Equipment (PPE)
4. Reagents
5. Equipments


##### Procedure

1. Lecturer avails the course outline/practical manual to the technologists.
2. Lecturer with technologist ensures the requirements and availability required for the practical.
3. Practical schedule prepared based on timetable for the practical to be undertaken for each semester.
4. Lecturer notifies students two weeks prior to conducting of the practical.
5. Technologists prepares for the availability of the materials required to conduct the experiments.

##### Output

- Timetable
- Practical schedule
- Practical reports
- Key indicators
- Practical manual
- Timetable table

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## 2. Standard Operating Procedure

### Title: Procedure for conducting practical

#### Input

1. Practical Manual
2. Laboratory safety rules
3. Equipments and reagents
4. Personal Protective Equipment (PPE)
5. Practical attendance register


#### Procedure

1. Lecturer notifies technologist on the practical to be conducted and provides the practical manual two weeks before the session.
2. Technologist goes through manual and ensures availability of materials for the experiment.
3. Before practical, the technologist ensures the students understand the rules and regulation in conducting themselves during the laboratory session.
4. Students are provided with the laboratory manual.
5. Lecturer/ technologist gives a brief introduction on the practical to be conducted.
6. Students conduct the experiment within two hours as stipulated in the timetable.
7. Signing of the practical attendance register and writing of the practical report within one week.
8. Lecturer marks the reports

#### Output

- Laboratory reports
- Attendance register
- Key indicators
- Lab reports
- Lab attendance register

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### 3. Standard Operating Procedure

**TITLE:** Equipment Maintenance and Calibration

**SCOPE:** Animal science laboratory

**RESPONSIBILITY:** Chairman of department, technologists, staff

**PURPOSE:** To Outline the Methods and Frequency of Evaluating and Maintaining Equipment Used in Animal science department

#### **PURPOSE**

1. To ensure that equipment used in animal facilities for the generation, measurement, or assessment of research data is adequately inspected, cleaned, and maintained.

#### **RESPONSIBILITY**


1. It is the responsibility of the COD, technologists and staff, to ensure that all equipment is appropriately calibrated cleaned, maintained in good working order and that it is available for research personnel as requested.
2. The technologists in charge is responsible for maintaining a summary of equipment calibration/certification on the Equipment Maintenance
3. The senior technologists maintain written records of department owned equipment calibrations. These records should include the equipment's serial number, date of procedure, who the procedure was performed by, and the date of the next scheduled procedure; records are maintained on the Equipment Maintenance Log.
4. The Technologists maintains original equipment records of maintenance/calibration on all non-GLP equipment and forwards copies to the chairman of department. These original records are maintained until the next calibration cycle is completed.

#### **PROCEDURES**

1. All equipment used in animal laboratory for the generation, measurement, or assessment of research data should be inspected prior to and cleaned after each use to ensure a regular and high quality of performance.
2. All equipment used in animal laboratory for the generation, measurement, or assessment of data is inspected, tested, calibrated and/or standardized, and approved by a licensed subcontractor or designated staff; this calibration is memorialized by a written label affixed to that equipment.
3. The Technologist, or designee, is responsible for reconciling equipment spreadsheet identifiers, serial numbers, and certification/calibration labels on each piece of equipment with the Equipment Maintenance before the departure of the certifying technician when possible. Similarly, the Equipment Maintenance Log shall be reconciled with the original records of calibration/certification provided by the certifying technician.
4. Any equipment found to have an outdated calibration/certification label will be reported to the COD immediately.
5. The COD is responsible for removing the equipment from service or, if the equipment is unique and must remain in service until recalibration/re-certification takes place, affixing a label to the equipment stating that this equipment is outside its date of calibration/certification and may result in the generation of inaccurate data.

#### **RECORDS**

1. Written records are maintained of all GLP equipment inspections, maintenance, testing,

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calibration, and/or standardizing procedures. These records containing the date of the procedure, the person performing the procedure, a description as to whether the procedures were routine and that they followed standard operating procedures (SOP) are recorded on the Equipment Log Sheet.


2. Written records are kept of non-routine repairs performed on GLP equipment as a result of failure and malfunction on the Equipment Log Sheet. Such records shall document the nature of the defect, how, when, and by whom the defect was discovered and any remedial action taken to correct the defect.

3. Equipment Log Sheets are maintained in an Equipment Log Book for each piece of GLP equipment and, when practical, should be attached to or in close proximity to that piece of equipment. Log books for equipment that it may be impractical to attach to or have in close proximity due to size, portability, or unsuitable environment may be maintained in the COD office maintained until the next calibration cycle has been completed.

4. The technologists maintain written records of all Division-owned equipment calibrations. These records should include the equipment's serial number, date of procedure, who the procedure was performed by, and the date of the next scheduled procedure; they are maintained on the Equipment Maintenance Log.

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#### 4. Standard Operating Procedures

##### **TITLE: Spills of Hazardous Chemicals and microbiological cultures**


These Standard Operating Procedures describe the steps to be taken

1. To prevent the spill of a hazardous chemical
2. To respond to a chemical spill that has occurred.
3. Information about spill kits is also given.

Before using a hazardous chemical:

1. Familiarize yourself with the potential hazards of that chemical. Material Safety Data Sheets (MSDS's) are a valuable source of information.
2. Evaluate the type of toxicity of the hazardous chemical (i.e., corrosive, irritant, sensitizer, carcinogen) and the possible routes of exposure (inhalation, skin absorption, ingestion, injection). Evaluate hazards of flammable and explosive chemicals.
3. Select appropriate procedures to minimize exposure. Wear appropriate personal protective equipments
4. Be prepared for accidents. Know what specific action you will take in the event of a chemical spill. Know the location of the laboratory spill kit, be familiar with the location of the nearest fire alarm and telephone, and know emergency telephone numbers.
5. Have a knowledgeable colleague review your experimental design and safety procedures to judge the adequacy of the precautions and emergency steps.
6. Purchase only the amount of hazardous material that will be used within a reasonable period, in the smallest container that is practical.
7. Plan the transportation of hazardous materials to avoid heavy traffic areas and times. Use hazardous materials inside the chemical fume hood.
8. Use secondary containers, metal cans, or plastic-coated bottles for storing and transporting.

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## 5. Standard Operating Procedure

### TITLE: Decontamination of Bio-Safety Cabinet (BSC):

#### Recommended decontamination procedure

1. With the cabinet blower on, remove all materials, reagents, and waste containers from the cabinet and either store or discard properly.
2. Clean up any spills which may have resulted from removal of materials from the BSC and discard properly.
3. Make sure the plenum drain valve (located underneath the front of the cabinet) is closed, and spray disinfectant into the front grill of the cabinet. Liberally apply disinfectant to the work surface, side walls, back wall, and inside of sash. Allow disinfectant to remain on the surfaces for at least 10 minutes or as recommended on disinfectant label.
4. Raise the workspace grill and work surface (it should lift up in some manner) and liberally apply the disinfectant to the underside and all surfaces beneath. You may need something or someone to hold the work surface up while you spray disinfectant. Allow disinfectant to sit for at least 10 minutes or as recommended on disinfectant label.
5. If using a chlorine-based disinfectant, after sufficient contact time has elapsed, using a hand mop or paper towels, wipe down all surfaces (including underneath the workspace and grill) with water, followed by 70% ethanol or 70% isopropanol (v/v, diluted in water) to remove any residue left by the disinfectant. This will help prevent subsequent corrosion of the cabinet surfaces.
6. After decontaminated surfaces have dried, replace the workplace grill, close the sash, and turn off the blower.
7. For relocation, repair or decommissioning, also wipe down all external surfaces of the biosafety cabinet with an appropriate disinfectant, allowing sufficient contact time.
8. If being sent for repair or being decommissioned / discarded, be sure to remove any biohazard stickers after decontamination.
9. **DO NOT** use the BSC once it has been decontaminated for relocation, repair, or decommissioning. Place a sign on the BSC indicating date of decontamination.
10. If gaseous decontamination is indicated based on use of the biosafety cabinet, contact BSC technician to schedule decontamination.
11. When the BSC is moved to the new laboratory, it may not be used until recertified by an authorized BSC technician.

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## 6. Standard Operating Procedure

### TITLE: Decontamination of an Incubator

#### Recommended decontamination procedure

1. Remove all materials from the incubator and either store or discard appropriately.
2. Turn off incubator power supply and unplug from the source outlet.
3. Clean up any spills which may have resulted from material removal and discard appropriately.
4. Remove any modular shelving and liberally apply disinfectant to top, bottom, and sides of shelves. Allow disinfectant to remain on the surfaces for at least 10 minutes or as recommended on disinfectant label.
5. Liberally apply disinfectant to all surfaces inside the incubator, including the inside of the door and gaskets. Allow sufficient contact time for disinfectant (at least 10 minutes or as recommended on disinfectant label).
6. If using a chlorine-based disinfectant, after wait time, wipe down metal surfaces (including shelving) with water, then 70% ethanol or 70% isopropanol (v/v, diluted in water) to remove any residue left by the disinfectant. This will help prevent subsequent corrosion of the surfaces.  
*Important:* If being sent for repair or being decommissioned/discarded, be sure to remove any biohazard stickers after decontamination.
8. Do not use the incubator once it has been decontaminated for relocation, repair, or decommissioning. Place a sign on the incubator indicating date of decontamination. (See Appendix A for a sample sign)
9. If necessary, tape the door shut to prevent opening during transport.

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## 7. Standard Operating Procedure

### TITLE: Decontamination of a Centrifuge

#### Recommended decontamination procedure

1. Turn off power supply and unplug from source outlet.
2. Clean up any spills or residual organic material with soap and water and discard properly.
3. Remove any rotors and baskets/buckets and liberally apply disinfectant all surfaces of the rotor and baskets/buckets. Allow disinfectant to remain on the surfaces for at least 10 minutes or as recommended on disinfectant label. If rotor is non-removable, apply disinfectant in place and be sure to wipe the underside of the rotor if possible.
4. Liberally apply disinfectant to all surfaces inside the centrifuge, including the inside of the lid and gaskets.
5. Wipe down the exterior of the centrifuge with disinfectant and allow sufficient contact time.
6. If using a chlorine-based disinfectant, after wait time, wipe down all metal surfaces (including rotors) with water, then 70% ethanol or 70% isopropanol (v/v, diluted in water) to remove any residue left by the disinfectant. This will help prevent subsequent corrosion of the surfaces.
7. If the centrifuge is equipped with a vacuum pump and HEPA filter, contact EHS for assistance in determining if decontamination of the tubing and pump is necessary.
8. Do not replace the rotor in the centrifuge, but close the lid.
9. **Important:** If being sent for repair or being decommissioned/discarded, be sure to remove any biohazard stickers after decontamination.
10. **DO NOT** use the centrifuge once it has been decontaminated for relocation, repair, or decommissioning. Place a sign on the equipment indicating date of decontamination.

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## 8. Standard Operating Procedure

### TITLE: Decontamination of a Refrigerator/Freezer

#### Recommended decontamination procedure

Remove samples from the refrigerator/freezer and defrost entirely prior to relocation. Plan for 2 days of freezer downtime during this process. Before thawing, identify hazardous materials stored in the freezer.


1. Remove all materials from the refrigerator or freezer and either store or discard properly.
2. Turn off power supply and unplug from source outlet. Unplug the freezer in the morning. This allows you to monitor runoff throughout the day.

*Never use sharp objects to chip at the ice. Freezer walls are easily punctured by sharp objects, allowing coolant to escape and resulting in expensive repairs or replacement costs.*

*Never allow liquid to run directly onto floors creating a slip hazard, or down any outside drain.*

3. Establish a wick and reservoir system to manage the melting ice:
4. Clean up any spills or residual organic material with soap and water and discard properly.
5. Remove any modular shelving and liberally apply disinfectant to top, bottom, and sides of shelves. Allow disinfectant to remain on the surfaces for at least 10 minutes or as recommended on disinfectant label.
6. Liberally apply disinfectant to all surfaces inside the refrigerator/freezer, including the inside of the door and gaskets.
7. If using a chlorine-based disinfectant, after wait time, wipe down all metal surfaces (including shelving) with water, then 70% ethanol or 70% isopropanol (v/v, diluted in water) to remove any residue left by the disinfectant. This will help prevent subsequent corrosion of the surfaces.
8. Replace the shelving inside the unit, and close the door.
9. **Important:** If being sent for repair or being decommissioned/discarded, be sure to remove any biohazard stickers after decontamination.
10. Do not use the refrigerator/freezer once it has been decontaminated for relocation, repair, or decommissioning. Place a sign on the equipment indicating date of decontamination.

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## 9. Standard Operating Procedure

### Title: Procedure for Sample Handling

**SCOPE:** The above procedure covers both internal and external customer sample handling and submission.

**REFERENCES;** OIE terrestrial manual of animal health

**Purpose:** Standardised sample receipt

**RESPONSIBILITIES: Laboratory technologist**

### 1.0 REQUIREMENTS

- 1.1 Lamina flow cabinet
- 1.2 PPEs
- 1.3 Specimen tray (stainless steel)
- 1.4 Refrigerator (4°C)
- 1.5 1.5 Disinfectant (30% Lysol)
- 1.6 Deep freezer (-20°C)
- 1.7 Register book
- 1.8 Sample receiving form
- 1.9 Disposable towels
- 1.10 Writing materials
- 1.11 Computer
- 1.12 Pedal-operated waste bin
- 1.13 Sink with running water and soap


### 2.0 SAFETY PRECAUTIONS

- 2.1 Always wear PPEs when handling samples in the lab
- 2.2 Minimize spillage and aerosols

### 3.0 SAMPLE HANDLING

#### 3.1 Receiving the Sample at the Reception

- 3.1.1 Place the sample on the appropriate receiving tray
- 3.1.2 Fill the sample receipt register with farmer's particulars
- 3.1.3 Transfer the information to the laboratory request form
- 3.1.4 Assign the lab number to the sample
- 3.1.5 Get history of the case from the farmer and record on the laboratory request form
- 3.1.6 Assign the test by filling the inter-lab form
- 3.1.7 Inform the farmer about the test to be performed, the charges and issue with an invoice
- 3.1.8 After he gets the MR, give the farmer the lab contact information, sample number
- 3.1.9 Brief the farmer of the turn-around time
- 3.1.10 If the sample is received late and cannot be transferred to the processing lab immediately, the sample shall be stored in the fridge or freezer depending on the storage requirements

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#### 4.0 Sample Transfer

- 4.1 Submit the sample together with the inter-lab form to the appropriate testing laboratory
- 4.2 The submitting officer and receiving officer to sign appropriately in the lab transfer ledger book
- 4.3 If the sample cannot be processed immediately, store in an appropriate fridge or freezer depending on the sample storage requirements

#### 5.0 Sample Analysis

- 5.1 Analyze the sample using the appropriate procedure (SOP) according to the test requested
- 5.2 Communicate the results to the farmer/ Student through appropriate communication channels as agreed with the customer e.g. email, postal address holding class section or telephone.

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## 10. Standard Operating Procedure

**Title:** Management of an uncontrolled spillage of a live culture of micro-organisms (microbiology)

**Introduction:** Micro-organisms are cultured in large volumes, the unexpected breakage of a culture vessel could result in the uncontrolled release of very large volumes of live culture.

### Safety precautions

Wear appropriate personal protective equipment, Laboratory coat, pairs of laboratory gloves and face shield or safety glasses. In the event of the release of a very large volume assistance may be needed: Class 1 or standard laboratory organisms are attenuated so as not to sustain a viable infection in healthy individuals.

### 3. Quality Assurance/Controls

Spill kit is refilled after use. Record of usage of spill kit are kept by technologist in charge.

### 4. Method – controlled disposal (of contaminated culture)

Make up an appropriate concentration of PreCept and add to the culture.

Or add appropriate number of PreCept tablets directly to the culture.

After the required time period has elapsed dispose of down a sluice or a laboratory sink.

### 5. Method – large spillage (2L culture flask)


Stop spillage if safe to do so. If aerosols may have been created, evacuate area for at least 15 minutes, posting appropriate signage on entry door. Locate Spill Kit make up an appropriate solution of PreSept. Deploy a ring of granules around the spillage to prevent the spread of the liquid. Working inwards, gradually apply sufficient granules to the spillage to absorb the liquid. If broken glass is present use forceps to remove to a sharps bin. Once the liquid has been completely absorbed use the supplied brush & pan to collect the contaminated granules. Place the granules and the brush & pan in a doubled up autoclave bag – supplied. Place the bag in a metal autoclave bucket and ensure this is sterilised in an autoclave. At 121°C for 15 minutes. Decontaminate spillage area with PreSept solution and absorbent towel. Dispose of absorbent towels and autoclaved granules etc. appropriately as laboratory waste.

### 6. Method – Small spillage

If broken glass is present use forceps to remove to a sharps bin. Place sufficient disposable absorbent towels over the spillage to absorb the liquid and dispose of as biological waste. (Orange bin/bag) Thoroughly clean area with PreSept and disposable absorbent towels and dispose of towels as biological waste. If the surface to be cleaned is likely to be damaged by PreSept (stainless steel) then use Distel instead of PreSept. Inform person responsible for that area of any issues arising

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#### 4. GENERAL LABORATORY SAFETY GUIDELINES

Standard operating procedures must be readily available to all laboratory employees. The following guidelines have been established to minimize or eliminate hazards in the laboratory. These guidelines have also been provided to maintain a safe laboratory environment. It is the responsibility of each person that enters into the laboratory (whether it's visitors, students, faculty, or staff) to understand the safety and health hazards associated with the chemicals and equipment in the laboratory. It is also the individual's responsibility to practice the following general safety guidelines at ALL times:

1. Always wear proper eye protection in chemical work, handling and storage areas.
2. Always know the physical and chemical hazards associated with the materials that are being utilized in the lab.
3. Always wear appropriate protective clothing.
4. Eating, drinking, smoking, gum chewing, applying cosmetics, and taking medicine in laboratories where hazardous chemicals are used is strictly prohibited.
5. Laboratory refrigerators, ice chests, cold rooms, ovens, and so forth should not be used for food storage or preparation.
6. Confine long hair and loose clothing. Do not wear high-heeled shoes, open-toed shoes, sandals or shoes made of woven material. Do not wear shorts, cutoffs or miniskirts, or cover these with a suitable lab coat or apron.
7. Always wash hands and arms with soap and water before leaving the work area. This applies even if you have been wearing gloves.
8. Never perform any hazardous work when alone in the laboratory. At least two people must be present and undergraduate students must be supervised by an instructor at all times.
9. Never perform unauthorized work, preparations or experiments.
10. Never engage in horseplay, pranks or other acts of mischief in chemical or biological work areas.
11. Never remove chemicals from the facility without proper authorization.
12. Be familiar with the location of emergency equipment – fire alarm, fire extinguisher, emergency eyewash and safety shower. Know the appropriate emergency response procedures.
13. Use equipment and hazardous chemicals only for their intended purposes.
14. Never mouth pipette chemicals when transferring solutions. Instead, you should always use a pipette bulb to transfer solutions.
15. Never return reagents to stock bottles.
16. Always lubricate glass tubing thermometers, or thistle tubes before inserting them into a stopper. Always wrap toweling around them while inserting into the stopper. (Keep your hands together in the process.)
17. Use a hood whenever there is a possibility of poisonous or irritating fumes being emitted from the chemicals being utilized.
18. Never leave an experiment unattended while it is being heated or is rapidly reacting.

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19. Keep equipment back from the edge of the lab bench to prevent spillage.
20. Support all beakers and flasks with clamps. Do not use cracked or chipped glassware.
21. Never use flames with volatile solvents.
22. Read all labels on chemicals twice before using them in the lab.
23. Report any accident, however minor, to your teaching assistant, research assistance, Principal Investigator or lab supervisor immediately.

<b>Prepared By:</b>	<b>Signature</b>	<b>Date</b>
<b>Approved By:</b>		

## 5. RECORDS

This section is used to identify records

Record ID	Owner	Location	Record Media	Retention/Disposition