CHUKA UNIVERSITY

WORK INSTRUCTION

FOR

BIOLOGICAL SCIENCES PRACTICAL SESSIONS (CU/WI/BIOL/02)

DOCUMENT REVIEW SHEET

The signatures below certify that these 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.

Name	Signature	Date
Revised By: DAVID KIBAARA		18.3.2013
Controlled By: HOD/COORDINATOR		20.3.2013
Approved By: DEAN		25.3.2013

CONTENTS

1.0 AMENDMENT RECORD SHEET

DATE	ISSUE NO.	REVISION NO.	PAGE NO.	SUBJECT OF REVIEW /MODIFICATION	REVISED BY	APPROVED BY
18.3.13	02	00	ALL	Changed Chuka University College to Chuka University and inserted a new Logo	Technologist	Dean
18.3.13	02	00	ALL	Changed CUC to CU	Technologist	Dean
18.3.13	02	00	ALL	Changed QMR to MR everywhere it existed	Technologist	Dean
18.3.13	02	00	ALL	Changed Principal to Vice-Chancellor everywhere it existed	Technologist	Dean
18.3.13	02	00	ALL	Replaced Quality Management Representative with Management Representative all over the footer	Technologist	Dean

2.0 GENERAL

2.1 Purpose

The purpose of this Work Instruction is to ensure that all practical work and learning of Biological Sciences courses are carried out effecctively and efficiently, and in compliance with the course requirements of the Bilogical Sciences Section.

2.2 Scope

This WI applies to .to laboratory and field work/practicals in Chuka University.

2.3 References

- ISO 9001:2008 Clause 4.2.3, 7.5, 7.6
- Quality Manual
- Biology Laboratory Manual
- Manufacturer's Operatinng Instructions for the various pieces of equipment.

2.4 Definitions and Abbreviations

Definitions

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

- Laboratory Session: Time duration allocated for student to do laboratory sessons.
- Laboratory Sheet/manual: A printed material usually containing a series of instructions and information given to the student on how to conduct the laboratory lesson.
- Laboratory Report: A written report prepared by student based on individual practical lesson requirements. The format and requirements are usually stated in the laboratory sheet.
- Laboratory Coordinator: A person in charge of coordinating all the laboratory sessions of the semester and administrating laboratory matters.
- Laboratory Instructor: An academic staff (lecturer or tutor) in charge of the laboratory session. The laboratory instructor will give briefing and instructions to students during the laboratory session.

Abbreviations

AMR = Assistant Management Representative
MR = Management Representative
QMS = Quality Management System

2.5 Responsibility

- The ***Coordinator, Biological Sciences***, has the principal responsibility of ensuring that this Work Instruction remains adequate for its intended purposes and list specific responsibilities for the activity covered by the WI.
- The ***students*** enrolled and taking Biological Sciences courses will be involved in the collection, presevation and processing of some of the specimens according to the WI.
- The ***laboratory technologists*** will ensure that the students carry out their practicals in adherance to the WI.
- Each ***lecturer*** designing practical work will ensure that the students have a full understanding of the theoretical part of the WI.

3.0 BIOLOGY TOOLS AND EQUIPMENT OPERATION

- A list is made, of specific/special tools, equipment and materials required to perform the instruction. The list is detailed (e.g. serial numbers, lot, date, code etc.) to the degree necessary to perform the instructions in a satisfactory manner.
- Laboratory doors should always remain unlocked while practicals are in progress.
- A fire extinguisher should be fitted in each laboratory.

3.1 Light Microscope Operation

- Plug in the power cord into the outlet.
- Adopt a 6V 20W built-in brightness variable lamp.
- Turn iris of the condenser and make the aperture of condenser suitable for the aperture of objective.
- Rotate the objectives in sequence according to their magnification into the thread hole of the nosepiece. Insert the eyepiece into the inclined eyepiece tube.
- Put the specimen on the stage. Adjust it and make the specimen be at the center of the stage.
- First use power 10, turn the coarse focusing knob and make objective near specimen and then observe the image through the eyepiece and turn the coarse fousing knob down until the specimen image is visible. After that, turn the fine focusing knob until you get a sharp image.

3.2 Stereo Microscope Operation

- Plug in the power cord into the outlet.
- Select the stage–either the frosted glass stage which is used when a transparent specimen is being observed or black and white stage.
- If the specimen is white or black, use the black side to improve contrast with only incident illuminator.
- Place a specimen onto the stage.

- Loosen the body locking thumb screw and hold the microscope head and move the body up and down and fix it at the estimated working distance.
- Rotate the zooming knob while looking through the eyepiece until you see the image.
- Use the focusing handle to get the sharpest image of the specimen.
- Then look through the left eyepiece with your left eye and turn the diopter adjustment ring until you get an image as sharp as the right side.
- Make this adjustment without moving the focusing handle.
- Then grasp the right and left prism housing and moving them closer.

3.3 Refrigerator Operation

- Select a good location and place you refrigerator where it is easy to use.
- Avoid placing the unit near a heat source, direct sunlight or moisture.
- Maintain sufficient space on both sides as well as the top and maintain at least 2 inches from the rear wall.
- To avoid vibration, the unit must be level.
- The front should be slightly higher than the rear to aid in door closing.
- Leveling screw can be turned easily by tipping the cabinet slightly. Turn the leveling screws clockwise to raise the unit and counter clockwise to lower it.
- Connect the power supply cord into the outlet, leave the fridge on for 2 to 3 hours prior to use.
- Check the flow of air in the freezer compartment to ensure proper cooling.

3.4 Microtome Operation

Fixing of specimen

- Turn the hand wheel till the big pulling plate is hoisten to the highest position.
- Screw the gripper of stopping slicing to lock the handwheel and the wax lamp forceps in order to prevent it from falling.
- Turn the gripping handle on the wax lamp forceps to adjust the mouth size of the wax lamp forceps.
- Place the specimen at the expected position .Turn the gripping handle on the wax lamp forceps to grip the specimen.
- Loose the locking bolt of the wax lamp forceps to lock the specimen clamp.

Installation of microtome knife

- Turn the two left and right tightening screws of the microtome knife counter clockwise to withdraw.
- Turn and loose the two locking bolts of the left and right of the rear angle.
- Hold the back of the microtome knife making the cutting edge up carefully inserting into the tool carrier from the side direction.
- Turn the tightening screw of the microtome knife clockwise; evenly support the microtome knife and do not tighten it first.

- Frontwards and backwards, move and turn the tightening screw of the microtome knife and adjust the rear angle of the microtome till the expected position.
- Clockwise turn the tightening screw of the microtome knife and evenly tighten the microtome knife.
- Clockwise turn the locking bolt to tighten to the rear angle.

After Using the Microtome

- Turn the handwheel till the wax lamp forceps are hoisten to the highest position.
- Screw the gripper of stopping slicing to lock the handwheel and the wax lamp forceps.
- Take the microtome knife from the tool carrier and place it into the knife case.
- Take the specimen from the wax lamp forceps.
- Clear up the scraps of the slice.
- Clean the apparatus by locking the handwheel brush off the scraps of the slices with a dry brush and clean the apparatus with a dry rag.

3.5 Incubator and Oven Operation

Operating the Door

The door is opened by pulling on the door handle and closed by the handle being pushed in.

Switching on

The oven is switched on by pressing the push or turn control.

Setting air Changes

Moving the air slider opens and closes the air valve to control the supply and discharge of air.

Setting the Temperature

- Hold down the SET key and set the temperature setpoint with the push or turn control.
- After the set key has been released, the display briefly flashes the temperature setpoint.
- The display then changes to the actual current temperature and controller starts to control to the selected temperature setpoint.

Normal Operation

In this operation mode the oven operates continuously and heats and controls to the set temperature.

Selecting the Operating Mode

- After holding down the SET key, the current operating mode flashes on the display.
- A different operating mode can be selected with the push or turn control while the set key is being held down.
- After the SET key has been released the controller operates in the new operating mode.

3.6 Autoclave Operation

- Put on the latex or nitrite gloves to avoid touching the glassware with bare hands.
- The autoclave cannot remove oils transferred from your hands to the glass.
- Tear the aluminum foil into a section 2 to 4 inches bigger than the opening of the glassware. Avoid overhandling the aluminum foil to minimize the chances of contamination.
- Cover the opening of the glassware with the flat sheet of aluminum foil.
- Create a lid by pushing the edges of the aluminum foil down and molding the foil to the shape of the glassware.
- Assure that there are no holes in the aluminum foil and that it extends at least 1 inch down the outside of the container.
- Place the glassware on your heat-resistant tray.
- Adjust the setting on the autoclave to the proper time and begin the autoclave cycle. Autoclave glassware for 20 to 25 minutes on a gravity or dry cycle.
- Unlike on an oven, autoclave temperatures are preset to standard conditions and should not be changed.
- Wait for the cycle to complete and finish exhausting before you open the autoclave door.
- Wearing heat-resistant gloves, slowly open the autoclave and remove sterilized contents.

4. RECORDS

This section is used to identify records

Record ID	Owner	Location	Record Media	Retention/Disposition