LABORATORY MANUAL

This manual serves as a comprehensive guide for all users of our laboratory facilities, including students, researchers, and faculty members. It outlines the rules, regulations, and safety protocols that must be followed to ensure a safe and productive environment for educational, research, and experimental activities.

Contents

Definition of Terms

Users:

- Any individuals such as students, researchers, and faculty members who will use lab facilities for educational, research, or experimental purposes.
- There can be five (5) types of users depending on their classification.

GROUP	CATEGORY
Group A	MatE Students and students taking ENSC courses with laboratory component
Group B	Research, Extension and Professional Staff (REPS) under research projects in DES
Group C	Students, REPS, and Faculty members under CEAT
Group D	Students, REPS, and Faculty members under UP System
Group E	Students, REPS, and Faculty members outside the UP System; Visitors

Activity:

- Any activity conducted inside the laboratory which may involve conducting experiments, analyzing data, and performing tests.
- There are three (3) types of laboratory activity depending on the prioritization of the laboratory activity.
  - Type 1: Class laboratory experiment/activity
  - Type 2: Research Project Experiments
  - Type 3: Special Class Activities, Thesis Experiments, Other Experiments

Laboratory Space:

- There are two (2) types of laboratory space depending on the activities conducted in the laboratory.
  - Instructional Laboratory (Room B108):
    - Overseen by the Instructional and Research Laboratory Facilities Committee (IRLFC) of the department.
  - Research Laboratory:
    - Each room is managed by the respective research project head responsible for the activities housed within.

Room	Research Head
B107	Prof. Jey-R Ventura
A107	TBA
A109	TBA
A110	TBA

Laboratory Rules and Regulations

Before entering the laboratory:

- All users must pass the general laboratory safety exam before they can use the laboratory.
- For instructional classes, the FIC must ensure that all students in the laboratory class have passed the exam prior to the first experiment.
- Important notes
    - ☐ For safety reasons, working alone in the laboratory is strictly prohibited, all experiments must be conducted with at least another person.
    - ☐ Users must know the hazards of materials, equipment, and chemicals to be used during the laboratory activity.
    - ☐ Users must always follow the laboratory safety guidelines and bring with them their MSDS or PSDS.
    - ☐ Users must keep emergency contact information and reporting steps in mind.
    - ☐ Users must be aware of emergency routes and exits.
    - ☐ Users must be aware of the location of the fire extinguisher, eye wash station, safety shower, first aid kit, and spill kits (ask the laboratory technician or FIC if unsure).

While working in the laboratory:

- All users must log in and log out in the provided logbook upon entry to the laboratory.
- All users must wear the necessary Personal Protective Equipment (PPE) inside the laboratory.
- All users must bring a printed MSDS (Material Safety Data Sheet) for any chemicals or reagents needed during the experiment or lab activity.
- Users must log in each time they will be using any equipment in the laboratory.
- Never leave an experimental setup unattended.
- Unauthorized personnel may be asked to leave the laboratory premises by personnel-in-charge.
- Prohibited acts inside the laboratory include the following, but not limited to:
    - ☐ Eating and drinking
    - ☐ Smoking/Vaping
    - ☐ Hanging out
    - ☐ Horseplaying
- In case of any untoward incident, please ensure the following:
    - ☐ Inform responsible personnel (e.g., Class FIC, Project Head, Thesis Adviser).
    - ☐ Inform the assigned laboratory technician.
    - ☐ Fill out an incident report (Form 5).
    - ☐ Follow procedures for cleaning the laboratory.

After working in the laboratory:

- All users should perform the following before leaving the room to keep the facility in good condition:
    - ☐ Clean their workspaces
    - ☐ Wash and return glassware
    - ☐ Properly dispose waste

- ☐ Return tools and equipment to their designated storage areas

- All materials and samples kept in the laboratory must be labeled with the owner's name, class, instructor/adviser, semester, and date prepared. Unlabeled samples will be discarded.

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MatE 101 F
Asst. Prof. Christian Aquino
1st Semester AY 2024-2025
August 15, 2024

- Students needing storage space in the laboratory must obtain permission from the FIC. Those conducting thesis-related laboratory activities will need to personally coordinate with their adviser to obtain an alloted space in the laboratory.

Laboratory Exam

A laboratory safety exam will be given to assess the capability of users to conduct activities in the laboratory. The Laboratory Manual and Protocols will be available on the department website.

	General Exam	Special Exam
Coverage:	The exam shall cover contents from the Laboratory Manual and Protocol.	The exam will cover only the parts of the laboratory manual relevant to the specific experiment or laboratory activity of the user.
Required:	All students with laboratory classes in the department (Group A). All students and REPS conducting activities in the laboratory (Groups B to E)	Group D and E users who will conduct a specific experiment/s in the laboratory for a specified period.
Schedule:	Every start of the semester or as requested in case some students/REPS fail the exam.	As required
Validity:	One (1) academic year	One (1) semester

Laboratory Hours

- *Regular laboratory working hours: Monday to Friday (8:00 am to 5:00 pm)*
- Beyond regular working hours, users must secure Form 4: Off-Hours Laboratory Work Permit, to be approved by the department chairperson.
- Off-Hours Laboratory Work is permitted until 7:00 pm from Monday to Friday only.
- Undergraduate students working outside regular hours must be accompanied by their adviser, a laboratory technician, or any faculty member.
- Weekend laboratory activities are not allowed.

Laboratory Forms

Form 1: Laboratory Request Form

- Required for Type 2 and Type 3 activities.
- Required for Type 1 activities if the activity is outside the regular schedule of laboratory class.
- Must secure the laboratory permit at least three (3) days prior to the actual use of the laboratory.
- **Procedure:**
    1. Fill out Form 1: Laboratory Request Form.
    2. Ensure that all necessary details are filled out.
        - Check the DES Laboratory Calendar for availability of schedule.
        - Note that only the users listed in the form will be allowed to use the laboratory at the specified time and date.
    3. Have the form signed by the laboratory FIC, thesis adviser, or research head for endorsement.
    4. Send the accomplished form to Asst. Prof. Jesha Faye T. Librea via email (jtlibrea@up.edu.ph) for recommending approval or disapproval.
        - Wait 1-2 working days for the approval or disapproval of your request.
    5. Submit the approved Form 1 to the laboratory technician during working hours before using the laboratory.
- Users must be present in the laboratory on their scheduled date. Failure to do so will result in a suspension of laboratory access for a minimum of two (2) weeks.
- To avoid suspension, users must cancel their scheduled appointment at least one (1) day prior to the set date by notifying the chair of the IRLFC at jtlibrea@up.edu.ph.

Form 2: Glassware Request Form

- Required for all laboratory activities.
- Must be filled out to borrow and use glassware in the laboratory.
- **Procedure:**
    1. Fill out Form 2: Laboratory Glassware Request Form.
        - Ensure that all necessary details are filled out.
    2. Submit the form to the class FIC/laboratory technician.
    3. Wait for the release of the requested glassware.
        - Note that an UP ID shall be presented and kept by the laboratory technician until the return of the borrowed glassware.
    4. Upon receiving the glassware, double-check the items and log them in the assigned logbook near the glassware cabinet.
    5. After the experiment, wash the glassware and return it to the class FIC/laboratory technician.
- In case of breakage, the user must replace the same item. Clearance will be on hold until the item/s is/are replaced.

Form 3: Chemical Reagent Request Form

- Only users with Type 1 activities can request chemical reagents from the laboratory.
- Users with Type 2 and Type 3 activities may request chemical reagents subject to an agreement between the department and the head/supervisor of the requesting user.
    - ☐ Research projects require approval from the department chair and the research project head.
    - ☐ For special projects in laboratory classes or thesis activities, students should write a request letter to the department chair, detailing the experiment methodology and the reagents needed, with endorsement from the laboratory FIC or thesis adviser.
- Must secure the laboratory permit at least three (3) days prior to the actual laboratory experiment.
- **Procedure:**
    1. Fill out Form 3: Chemical Reagent Request Form.
        - Ensure that all necessary details are completed.
        - Bring the MSDS (Material Safety Data Sheet) for the requested chemical reagents to ensure proper handling.
    2. Submit the form to the laboratory technician along with appropriate containers.

Form 4: Off-Hours Laboratory Work Permit

- Required for all laboratory activities outside working hours (8:00 AM to 5:00 PM).
- Must secure the laboratory permit at least 3 days prior to the actual laboratory experiment.
- **Procedure:**
    1. Fill out Form 4: Off-Hours Laboratory Work Permit.
        - Check the DES Laboratory Calendar for schedule availability.
        - Ensure that all necessary details are completed.
        - Note that only the personnel listed on the form will be allowed to use the laboratory on the specified date.
    2. Have the form signed by your supervising personnel (any faculty member or the laboratory technician) that will accompany you throughout the experiment. Unaccompanied experiments will incur penalties.
    3. Have the form signed by your laboratory FIC, thesis adviser, or research head for endorsement.
    4. Send the accomplished form to jtlibrea@up.edu.ph for recommending approval or disapproval.
        - Wait 1-2 days for the approval or disapproval of your request.
    5. Submit the approved Form 4 to the laboratory technician during working hours before using the laboratory.

Laboratory Safety

Personal Protective Equipment (PPE)

- Personal Protective Equipment (PPE) is essential for safeguarding yourself from potential hazards in the laboratory. This includes items like lab coats, gloves, safety goggles, and face shields, which protect against chemical spills, sharp objects, and other risks. Always wear the appropriate PPE for the tasks you are performing to minimize the risk of injury and exposure.

Chemical Handling

- Proper chemical handling is crucial for ensuring safety in the laboratory. This involves understanding and following procedures for storing, using, and disposing of chemicals. Familiarize yourself with the Material Safety Data Sheets (MSDS) for each chemical, use appropriate containers, and work in well-ventilated areas to prevent accidents and ensure safe handling practices.

Waste Disposal

- Correct waste disposal is vital for maintaining a safe and clean laboratory environment. Segregate waste into designated categories such as chemical, biological, and general waste. Follow your lab's guidelines for disposing of each type of waste, and never pour chemicals down the sink unless authorized. Proper disposal helps prevent contamination and environmental harm.

Electrical Safety

- Electrical safety in the laboratory involves using electrical equipment correctly and ensuring that all electrical installations are up to code. Inspect cables and receptacles for any damage, avoid overloading circuits, and keep electrical equipment away from water. Proper maintenance and adherence to safety protocols reduce the risk of electrical hazards and potential accidents.

Reference:

- TechSilog #3 Chemical Handling and Safety
  - ☐ Link: https://www.facebook.com/dostbatangasph/videos/3885576048337280

Laboratory Suspension

- Access to any laboratory outside laboratory class hours will be suspended for the next two (2) weeks for any user who:
  - ☐ Violates any laboratory rules;
  - ☐ Demonstrates negligence in laboratory use; or
  - ☐ Fails to attend their scheduled time for use without prior cancellation.

Laboratory Clearance

Students

- All students enrolled in laboratory classes must obtain a laboratory clearance before their grade can be submitted.
- Students with outstanding issues (such as broken glassware, equipment, or misplaced tools/devices) will not receive clearance until these issues are resolved.
- Failure to comply will result in ineligibility to enroll in the following semester and/or prevent the issuance of clearance for transfer or graduation.

REPS

- Project staff must also complete a laboratory clearance at the end of their contract before receiving a certificate of employment.