JOSE RIZAL UNIVERSITY
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LABORATORY HANDBOOK

College of Computer Studies and Engineering

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I. INTRODUCTION

Safety for students, staff, and faculty is the top priority in the College of Computer Studies and Engineering at Jose Rizal University. The college is committed to creating an environment that places the personal safety and health of students, staff, faculty, and visitors first by controlling or eliminating recognized hazards. This safety manual describes policies and procedures that govern access to laboratories, handling of hazardous materials, inspection, and inventory control. Anyone accessing, using equipment, or handling materials in laboratories within the college must follow accepted procedures and adhere to the published policies. The procedures and policies were developed to assist the college in controlling hazardous situations, and therefore, everyone in the college must be familiar with the contents of this manual and know the appropriate actions to take when dealing with potential hazards.

II. SAFETY STANDARDS AND POLICIES

This manual specifies laboratory safety policies and standards. In addition to this manual, all personnel handling chemicals and hazardous materials must follow the OSH (Occupational Safety and Health) standards and policies. Other government and local regulations specified by the environmental protection and health institution should also be followed.

Hazards can cause injuries, loss of physical or cognitive functions, or even death. It is everyone's responsibility to maintain laboratory safety and report any suspected hazards to the right personnel, immediately. Laboratory managers should assess the risks and identify hazards periodically. Once assessed and identified, specific standards and policies must be developed. Students, staff, and faculty using the laboratory must be trained and learn developed policies and procedures.

III. ROLES AND RESPONSIBILITIES

a. Dean

The Dean of the college is directly responsible for the safety of all departments and units under his or her authority.

b. Department Heads

They are responsible for all tasks supporting shared governance, from shaping the department mission to building consensus around department goals.

c. Faculty

The individual is responsible for organizing/maintaining equipment, preparing the lab environment, monitoring student progress, and facilitating student participation in learning activities.

d. Laboratory Coordinator

The individual has the responsibility for overall responsibility for the supervision of the laboratory, including instruction of students in experimental techniques and some related theories, and coordination of multiple laboratory sections.

IV. GENERAL LABORATORY GUIDELINES AND POLICIES

1. The Computer Studies and Engineering (CSE) Laboratories are located in rooms H-201, H-301, H-303, H-304, H-306, H-310, H-311, H-401, H-404, H-406, H-406, H-407, H-410, H-411, H-412, H-507, H-511 and H-512 of the JRU H-Building.

2. The dispensing area of the laboratory equipment is located in room H-408 of the laboratory custodian's office.

3. Only faculty and students with engineering laboratory or any related subjects are allowed to perform the laboratory activity in the CSE laboratory designated areas.

4. Faculty and student are reminded to make a reservation request for the tools, materials, and equipment at least one day before the scheduled date to ensure the preparation and availability of the request.

5. The laboratory custodian is responsible for assisting the faculty in the preparation of tools or equipment during laboratory time

6. No equipment will be issued for a laboratory class, even during the scheduled time, if the faculty is not around in the laboratory.

7. Laboratory items cannot be taken out of the laboratory premises without proper notification to the laboratory coordinator. The use of laboratory equipment, etc., outside the campus is strictly prohibited.

8. Using the laboratory room for any related school activities, such as projects, etc., requires the permission of the College Dean.

9. Laboratory safety manuals and laboratory experiment manuals are allowed to be photocopied, and these are available in the laboratory custodian's office.

10. Violations, disobedience, negligence, or ignorance of any of the above and other laboratory policies and guidelines will be treated as minor offenses and subjected to necessary disciplinary actions.

V. LABORATORY AREAS

a. Computer Laboratory

‘ It is a designated room or area within a larger institution that is equipped with multiple computers, along with the necessary supporting devices and furniture, for a specific purpose.

b. Computer Hardware Laboratory

Is a designated workspace that provides students or professionals with hands-on experience regarding the: Different hardware components of a computer and their

troubleshooting. Different peripherals, their performance, and cost characteristics. Installation of various operating systems, and their capabilities.

c. Electronics Laboratory

It is a workspace area for examining the operating principles of electronic devices and obtaining the characteristics of electronic circuit components. Design and practical applications of power supplies, amplifiers, oscillators, and various digital electronic circuits are studied.

d. Computer Network Laboratory

Is a facility designed to provide students with hands-on experience in computer networking concepts. It typically contains a variety of computers, networking devices, and software that students can use to configure, troubleshoot, and experiment with networks.

e. Machine Shop

It is a dedicated space within a school, university, or training facility that provides students with hands-on experience in machining processes. It's essentially a miniaturized version of a real-world machine shop environment, equipped with essential tools and machinery for metalworking.

VI. LABORATORY SAFETY GUIDELINES

1. Computer Laboratory

a. Be aware of your surroundings and familiarize yourself with the exits, fire extinguishers, and first-aid kit locations.
b. Maintain a clean and organized workspaces, prevent tripping hazards from loose cables and keeps your work area free of clutter.
c. Practice good posture sitting up straight with proper back and neck support helps prevent strain and injury.
d. Take breaks for your eyes look away from the screen and refocus your eyes periodically to avoid strain.
e. Never eat or drink near computers spills can damage equipment and pose an electrical shock hazard.
f. Avoid touching exposed wires or outlets only qualified personnel should handle electrical components.
g. Don't overload power strips use surge protectors and avoid plugging in too many devices to a single outlet.
h. Report any electrical malfunctions if you notice sparks, unusual smells, or flickering lights, inform the instructor or lab technician immediately.
i. Turn off equipment when not in use helping to conserve energy and prevents overheating.
j. Never insert unauthorized devices only use approved peripherals like flash drives with permission. This helps prevent malware infections.
k. Beware of phishing scams and don't click on suspicious links or open unknown attachments in emails.
l. Don't download unauthorized software this can introduce viruses or spyware.

m. Report any security concerns if you suspect a security breach or malware infection, notify the instructor or lab custodian.

2. Computer Hardware Laboratory

    a. Food and drinks are strictly prohibited in the lab to prevent spills and damage to equipment.
    b. Keep the workspace clean and organized to avoid tripping hazards and clutter.
    c. Consider using an anti-static wrist strap/mat to prevent electrostatic discharge (ESD) damage to components.
    d. Do not overload electrical outlets or extension cords.
    e. Turn off and unplug all equipment before opening the case or performing any maintenance.
    f. Never open a power supply unit (PSU) due to the presence of high voltage and potentially dangerous capacitors.
    g. Handle components with care. Avoid touching sensitive areas like circuit boards or pins.
    h. Use proper tools for specific tasks. Do not force components into slots or connectors.
    i. Report any damaged electrical cords or malfunctioning equipment to the laboratory instructor or custodian before proceeding.
    j. Be mindful of static electricity. Ground yourself by touching a grounded metal object before handling components.
    k. Never force components into slots or connectors. If something doesn't fit easily, double-check compatibility and alignment.
    l. Be aware of and cover sharp edges inside the computer case with tape to prevent cuts.
    m. Dispose of electronic waste according to proper procedures, not in regular trash bins.
    n. Organize cables neatly to prevent tripping hazards and potential damage from strain
    o. If a component feels unusually hot, turn off the computer immediately and report the issue.
    p. Be aware of potential fire hazards, such as overheating components or sparks.
    q. Report any suspicious smells or smoke to the lab instructor immediately.
    r. Be familiar with the location and proper use of fire extinguishers and first-aid kits

3. Computer Network Laboratory

    a. Food and drinks are strictly prohibited in the lab to prevent spills and damage to equipment.
    b. Keep the workspace clean and organized to avoid tripping hazards and clutter.
    c. Practice proper posture when working at benches or desks to avoid back and neck strain.
    d. Do not overload electrical outlets or extension cords.
    e. Always turn off and unplug equipment before performing any maintenance or troubleshooting.
    f. Immediately report any malfunctioning or damaged equipment to the instructor or custodian for repair or replacement.
    g. Never operate the equipment you haven't been trained on or that is not approved

for use in the laboratory.

h. Do not attempt to open or modify network devices unless explicitly authorized and trained to do so.
i. Use tools only for their intended purposes and ensure they are in good working condition.
j. Avoid unauthorized access and adhere to data security policies established by the organization.
k. Always adhere to established procedures for installing, configuring, and troubleshooting network equipment.
l. Exercise caution when connecting external devices or downloading files to prevent introducing malware into the network.
m. Always be aware of data privacy and security protocols when working in a network environment.
n. Be mindful of data security and avoid transferring sensitive information on unsecured networks.
o. Maintain proper documentation of all activities conducted in the lab, including equipment used, procedures followed, and any issues encountered
p. Be aware of potential fire hazards, such as overheating equipment.
q. Report any suspicious smells or smoke to the lab instructor immediately.
r. Be familiar with the location and proper use of fire extinguishers and first-aid kits.

4. Electronics Laboratory

a. Food and drinks are strictly prohibited in the lab to prevent spills and damage to equipment.
b. Keep the workspace clean and organized to avoid tripping hazards and clutter.
c. Practice proper posture when working at benches or desks to avoid back and neck strain.
d. Do not overload electrical outlets or extension cords.
e. Use only tools and equipment with non-conducting handles when working with electrical devices.
f. Whenever possible, unplug or de-energize equipment before troubleshooting, performing maintenance, or making connections.
g. All current-transmitting parts of any electrical devices must be enclosed.
h. When checking an operating circuit, keep one hand either in a pocket or behind your back to avoid making a closed circuit through the body.
i. Never change the wiring with the circuit plugged into a power source.
j. Never plug leads into the power source unless they are connected to an established circuit.
k. Check circuits for proper grounding with respect to the power source.
l. Do not insert another fuse of larger capacity if an instrument keeps blowing fuses
m. Immediately report any malfunctioning or damaged equipment to the instructor or custodian for repair or replacement.
n. Use tools only for their intended purposes and ensure they are in good working condition.
o. Always adhere to established procedures for installing, configuring, and troubleshooting network equipment.
p. Make sure that all DC power supplies, AC sources, and other power sources start from a zero voltage and zero current output or as directed in an experiment
q. Be aware of potential fire hazards, such as overheating equipment.
r. Be familiar with the location and proper use of fire extinguishers and first-aid kits.

5. Machine Shop Laboratory

General Policy

a. Food and drinks are strictly prohibited
b. Keep the shop clean, the metal scraps should be placed in the scrap bin. Store raw materials and projects. Do not leave any materials or tools on the tables or floor.
c. Know the safety requirements of your material.
d. Stay focused, do not permit anyone to distract you. No cell phones, ear buds, or headphones.
e. Know what to do in case of a fire. Be familiar with the location of fire exits.
f. Report any injury to the laboratory custodian or your instructor. First aid kits are accessible in the shop.
g. Be aware of sharp edges and chips. Always deburr fresh cuts and use a brush to remove chips.
h. Always use a clamp to securely hold material to combat applied forces from a tool.

Green zone

This is a low-risk zone for team-based project ideation and is restricted to hand tools and limited portable drill usage.

a. Clamp your work solidly, do not hold down work with your hand because this can cause serious injury.
b. Clean up, use shop vacuums and brooms to clean up your workspace.

Power Tools and Precision Machining Zone

It is the highest-risk zone and both contain machines/tools for subtractive fabrication. Training is required to operate within these zones.

a. Users must complete safety training and be approved to operate the desired machine or tool.
b. Always wear safety glasses.
c. Be sure all guards are in place before operating the machine.
d. Stop the machine before making measurements or cleaning chips.
e. Do not attempt to stop moving a spinning part with your hand.
f. Be familiar with the location of the machine's stop/E-stop switch or lever controls.
g. You are the only one who should operate controls.
h. Always be aware of the direction of rotation and RPM of the tool /part being cut.
i. Never reach over or near the rotating cutter.
j. Never start a cut until there is adequate clearance for all moving parts.
k. Use care when cleaning machines – use shop vacs and brushes to remove chips.
l. Never clean a machine with compressed air or your hands – chips are sharp.

VII. EQUIPMENT RESERVATION AND BORROWING GUIDELINES

These guidelines are in place to ensure everyone has fair access to lab equipment and to keep the equipment functioning properly.

A. RESERVATION GUIDELINES

1. Making a Reservation

a. Check Availability:
Before making a reservation, find out if the equipment you need is available during your desired time slot. This can usually be done through a filled-out borrower slip (F-COL-004), or by contacting the lab custodian.

b. Reservation Lead Time:
There may be a minimum lead time required for making reservations, especially for highly sought-after equipment. Be sure to plan and make your reservation well in advance at least one day before the scheduled time.

c. Reservation Limits:
Some labs may limit the amount of time a single user can reserve equipment on a given day or week. This is to ensure fair access for all users.

2. Cancelling a Reservation

a. Advance Notice:
If you need to cancel your reservation, be sure to do so as early as possible. This will allow other users to book the equipment. The laboratory may require a minimum cancellation notice period.

b. Informing Lab Custodian:
It's important to inform the lab staff about your cancellation, especially if you made the reservation through an online system. This will ensure the equipment is marked as available for others.

Additional Considerations

After-Hours Access:
Some labs may offer after-hours access to equipment with proper permission.
Sharing Reservations:
Sharing your reservation with another person may or may not be allowed, depending on your lab's policy.
Personal Equipment:
Check with your lab about bringing in your equipment for use with the lab's instruments.

B. BORROWING GUIDELINES

1. Borrowing Privileges:

    a. Typically, authorized lab personnel (faculty, staff, and student's approval) can borrow equipment.
    b. Some labs may restrict borrowing to specific groups due to equipment sensitivity or training requirements.

2. Borrowing Procedures:

    a. There are likely designated personnel responsible for equipment checkout.

    b. You may need to fill out a borrowing form using Borrowers Form (F-COL-004).

    c. Be prepared to present borrowers valid ID identification.

3. Borrowing Conditions:

    a. Loan Period:
    There will be a set loan period, often 1-2 weeks. Renewals may be possible if no one else has requested the equipment.

    b. Equipment Care:
    You are responsible for the proper care of the equipment while in your possession. Report any damage or malfunctions immediately.

    c. Return Procedures:
    Return the equipment on time and in the same condition you borrowed it. This may involve cleaning or repacking as instructed.

Additional Considerations:

Safety Training:
Some equipment may require safety training before borrowing.
After-Hours Borrowing:
There may be limitations on borrowing equipment outside of regular lab hours.
Specialty Equipment:
Special procedures may apply to borrowing high-value or hazardous equipment.

C. RELEASING GUIDELINES

1. Borrowing Procedures

    a. Equipment Request:
    Submit a formal request through a designated system (Borrowers Slip (**F-COL-004**), email, etc.)

    b. Request Information:

1. Borrower information (name, affiliation)
2. Equipment details (name, model number)
3. Intended use and duration of borrowing

c. Approval Process:
The request will be reviewed by authorized personnel (faculty, lab custodians) to assess the legitimacy of the request and ensure equipment availability.

d. Inventory Check:
The borrower will be responsible for verifying the completeness and functionality of the equipment upon pickup.

D. BORROWING AND RETURNING POLICY

1. The faculty or student must secure and fill out the laboratory borrower's form (F-COL-004) and deposit the IDs of the borrower upon releasing a certain request.

    a. The custodian must check the condition and functionality of the requested items before the release period.

    b. Borrower must also check all the items requested and sign the slip (F-COL-004) for acknowledgment

    c. The name of the person who appears on the requisition slip (F-COL-004) is responsible for the items.

    d. Overtime laboratory activity is strongly discouraged, kindly return the items properly 10 minutes before the end of class, courtesy of the next scheduled classes.

    e. Cancellation of request must inform the custodian immediately for possible re-scheduling of request

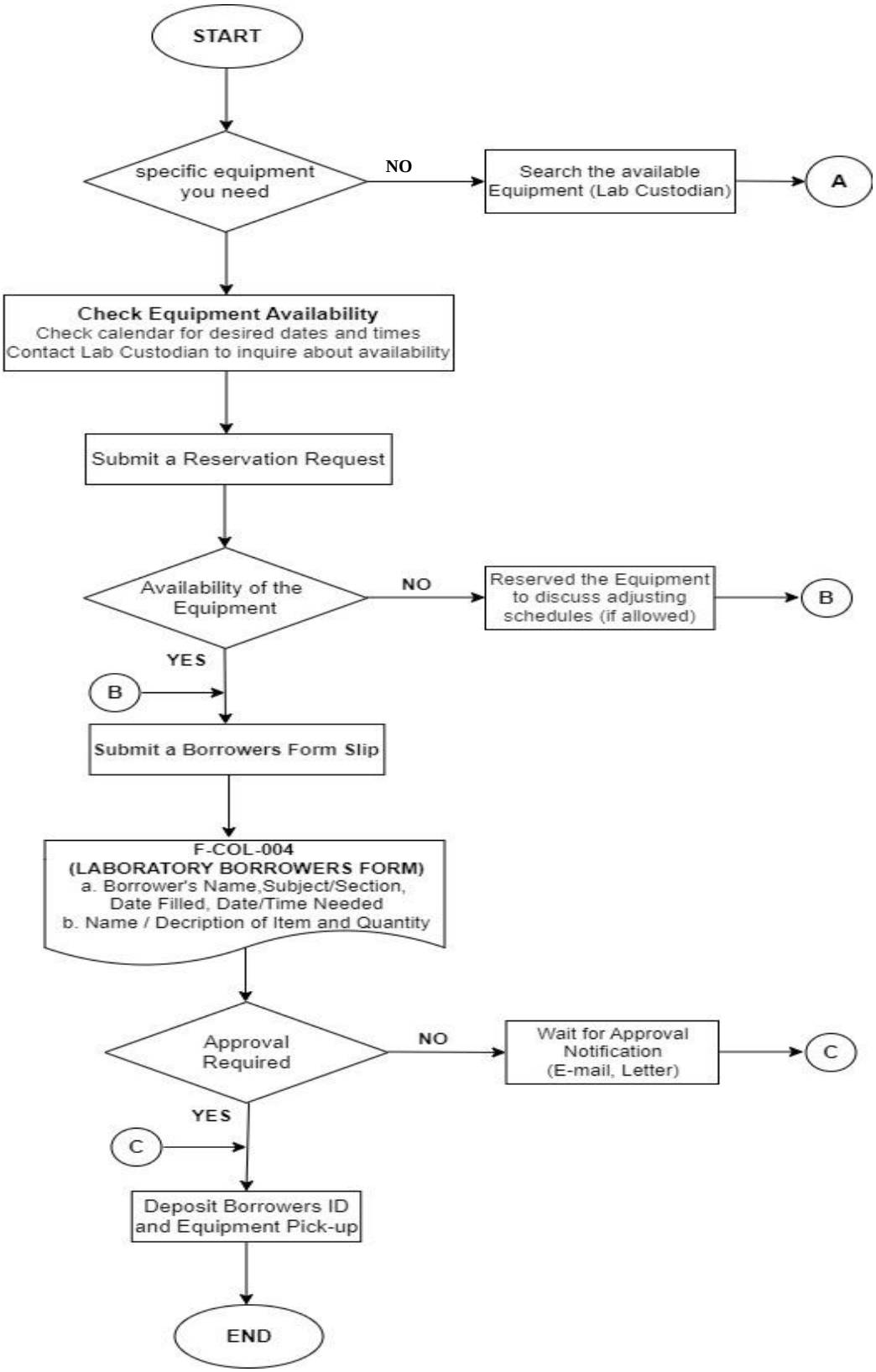
2. In the return period, the custodian will check the status of all borrowed items, and the IDs will be returned to the borrower

    a. In the event of any damages, missing items, or incidents inside the laboratory, the student or faculty concerned should promptly report in writing to the laboratory custodian.

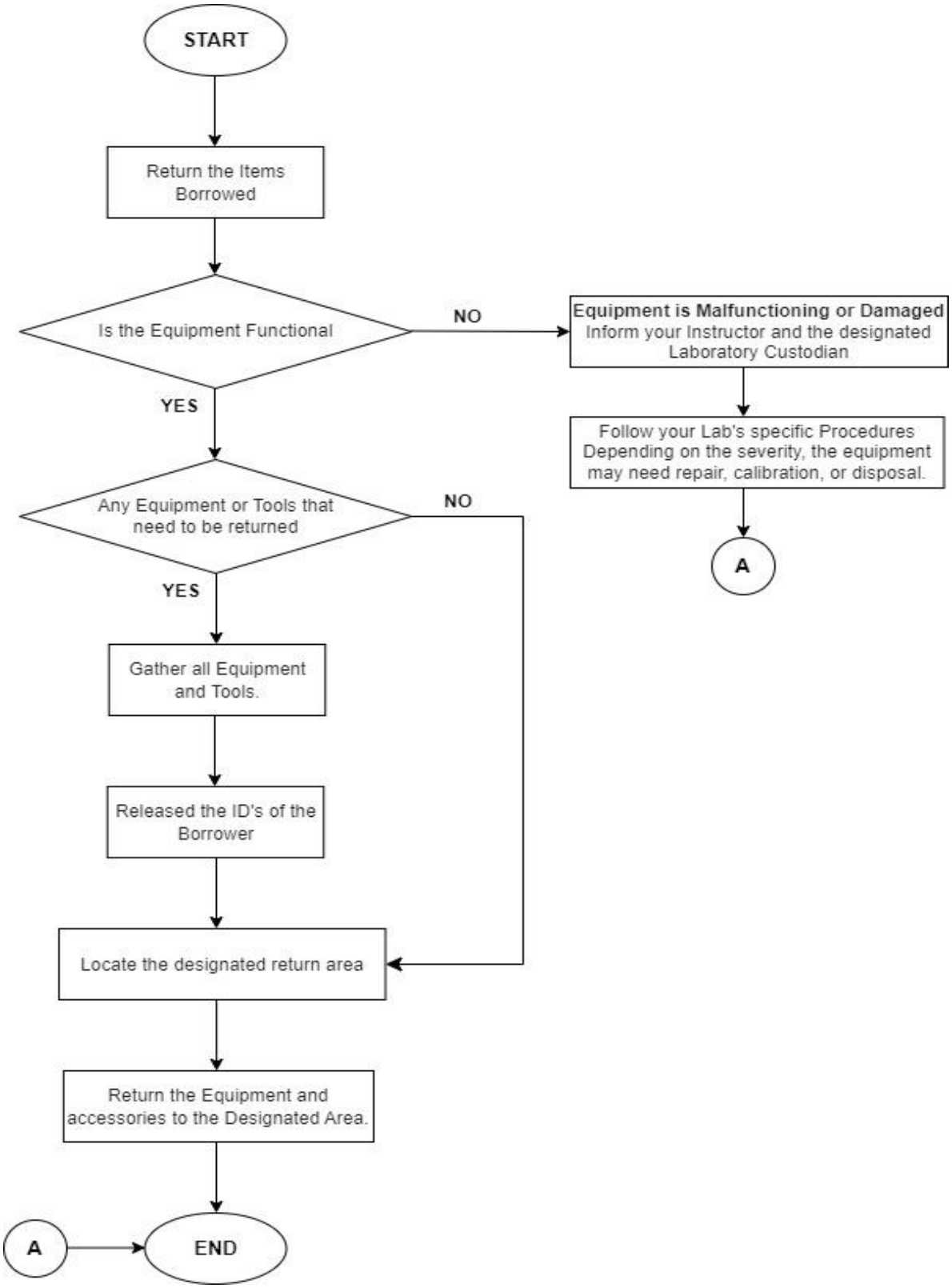
    b. Any damages or missing items such as equipment, tools, and any other non-consumable items that may be deemed unusable will be accounted for by the individual concerned. However, if the experiment is done by a group, damages will be equally distributed among the group members unless special arrangements are made.

    c. Replacement of any missing or lost items must be made before or at the end of the semester; otherwise, it will be pending clearances.

3. Laboratory Equipment Reservation and Borrowing Flow Diagram



4. Laboratory Equipment Return Flow Diagram



VIII. EQUIPMENT PREVENTIVE MAINTENANCE GUIDELINES

Preventive Maintenance

It is a proactive approach to keeping equipment in top condition. By following a regular schedule of inspections, cleaning, and servicing, you can prevent unexpected breakdowns, extend equipment lifespan, and ensure optimal performance.

1. Developing a Preventive Maintenance Program
    a. Identify Equipment:
        List all the equipment that requires maintenance in your facility.

    b. Prioritize Equipment:
        Rank equipment based on criticality, value, and risk of failure.

    c. Manufacturer Recommendations:
        Refer to the manufacturer's instructions for specific maintenance tasks and intervals for each piece of equipment.

    d. Develop Procedures:
        Create detailed procedures for each maintenance task, including steps, required tools, and safety precautions.

    e. Schedule Maintenance:
        Establish a schedule for preventive maintenance tasks based on manufacturer recommendations, equipment usage, and experience. This can be a daily, weekly, monthly, or yearly schedule depending on the equipment.

2. Implementation of the Preventive Maintenance Program:

    a. Laboratory Custodian:
        Responsible for conducting preventive maintenance tasks. Ensure they understand the procedures, safety protocols, and the importance of proper documentation.

    b. Inspections:
        Perform routine inspections to identify potential problems early on. Look for signs of wear, leaks, loose parts, or unusual noises.

    c. Cleaning and Lubrication:
        Clean equipment regularly to remove dust, debris, and contaminants. Lubricate moving parts according to manufacturer specifications to reduce friction and wear.

    d. Record Keeping:
        Maintain detailed records of all preventive maintenance activities performed. This includes the date, task completed, person who performed the task, and any observations or parts replaced.

IX. EQUIPMENT CALIBRATION GUIDELINES

Equipment Calibration

It outlines the procedures for ensuring the accuracy and reliability of measuring and testing instruments within an organization. It essentially guarantees that the equipment used for critical tasks produces consistent and trustworthy results.

Calibration Preparation

1. Identify Equipment:
    a. Create a comprehensive list of all equipment requiring calibration.
    b. Include details like equipment type, model number, serial number, and location.
    c. Utilize existing asset management systems if available.

2. Reference Calibration Requirements:
    a. Consult manufacturer's recommendations, industry standards, or internal quality procedures for calibration frequency.
    b. Note specific calibration procedures and acceptance criteria for each equipment.

3. Schedule Calibration Activities:
    a. Develop a calibration schedule based on the identified frequency and equipment priority.
    b. Utilize calendar software or dedicated tracking systems to manage scheduling.
    c. Consider lead times for calibration service providers to avoid delays.

4. Prepare Equipment for Calibration:
    a. Clean and inspect the equipment according to the manufacturer's instructions.
    b. Gather necessary documentation, including previous calibration certificates and operating manuals.
    c. Prepare the equipment for transport to the calibration facility if required.
    d. Attach a calibration tag with clear identification and calibration information.

5. Select a Calibration Service Provider:
    a. Research and select accredited calibration laboratories with relevant expertise for your specific equipment.
    b. Obtain quotes and compare pricing, turnaround times, and offered services.
    c. Ensure the chosen laboratory meets any regulatory or industry accreditation requirements.

6. Issue Calibration Request:
    a. Contact the chosen calibration service provider and request a formal quotation.
    b. Provide them with the equipment list using the calibration request form (F-COL-008), calibration requirements, and preferred scheduling details.
    c. Upon acceptance, complete any necessary paperwork for calibration service.

7. Prepare for Equipment Return:
    a. Coordinate with the calibration service provider for equipment return logistics.

b. Ensure proper packaging and transportation arrangements for safe equipment return.
c. Clear workspace for receiving the calibrated equipment.

8. Document and Maintain Records:
    a. Upon receiving the calibrated equipment, review and file the issued calibration certificate.
    b. Update your equipment list using calibration record form (F-COL-009) with the new calibration due date.
    c. Maintain all calibration records in a central location for easy access and future reference.