



THE MINISTRY OF TECHNOLOGY RESEARCH AND HIGHER EDUCATION
STATE UNIVERSITY OF PADANG
FACULTY OF SOCIAL SCIENCE
DEPARTMENT OF GEOGRAPHY

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STANDARD OPERATIONAL PROCEDURE (SOP)
USE OF SURVEY AND MAPPING LABORATORIES
STATE UNIVERSITY OF PADANG

A. Definition

Mapping survey labor is a laboratory that serves borrowing and returning survey tools and a place to store all survey and mapping tools as well as a place for lecturers and students to do practicum and research.

B. Destination

1. Explain the procedures for borrowing and returning survey equipment in the laboratory
2. Make it easier to apply for borrowing and returning survey tools
3. Make it easier to control survey instruments in the laboratory
4. Improve asset order and completeness of laboratory equipment

C. Scope.

This laboratory equipment lending procedure only applies to students, lecturers and outsiders who have received permission to borrow laboratory equipment with the terms and conditions that are enforced is a guarantee of laboratory equipment borrowing, namely in the form of user identity (KTM, KTP, and user's SIM) user identity. will be held as long as the user borrows the laboratory equipment and will be returned after returning the laboratory equipment. In addition, lending laboratory equipment uses an official letter from the institution or lecturer in charge related to the person in charge's signature or activities addressed to the laboratory head who has received ACC from the responsible lecturer.

The conditions that apply are:

- a) The laboratory equipment lent is in accordance with the loan letter
- b) The length of time for borrowing laboratory equipment is as stated in the loan letter.
- c) Laboratory assistants borrow and return laboratory equipment on weekdays, starting at 09.00-15.00
- d) If the return exceeds the time limit given without confirmation to the Laboratory, a fine will be imposed. A fine in the form of money of IDR 100,000 / tool / day.

D. Procedure

1. Mechanisms and Procedures for Borrowing Tools

Mechanisms and procedures for borrowing laboratory equipment in the laboratory are as follows:

- a) The user / student makes an official letter of application for borrowing Laboratory equipment with the signature of the chief executive or person in charge of activities to the Laboratory Coordinator.
- b) The letter that has been created by the user is shown to the Laboratory Coordinator to be coordinated whether on the D day the Laboratory equipment is borrowed or not.
- c) If the laboratory equipment is used for other purposes, the letter is returned to the user to be replaced when the borrowing time or the loan is canceled, if the laboratory tool is not used, the letter is returned to the user and the user continues the borrowed letter to be submitted to the Laboratory Coordinator
- d) Submit a letter of application for borrowing the tool that has been signed by the chief executive to the laboratory assistant.
- e) The user leaves an identity card (KTM / SIM / KTP that is still valid), a number that can be contacted by the user and the person in charge of the activity, in accordance with the provisions.
- f) Laboratory assistants take laboratory equipment that will be borrowed by users / students.
- g) Users / students and laboratory assistants check the condition of the laboratory equipment to be borrowed.

h) Users / students get Laboratory equipment in accordance with what was borrowed on condition that the return of Laboratory equipment must be in accordance with the initial condition of the tool when it was loaned.

2. Mechanism and Procedure for Returning Laboratory Equipment

Mechanisms and procedures for laboratory equipment in the Study Program are as follows:

- a) User / student returns Laboratory equipment to the Laboratory Assistant
- b) Laboratory assistants and student users check the condition of the laboratory equipment that has been borrowed, if the condition of the laboratory equipment is not in accordance with the initial conditions, the user must replace the laboratory tool which is the same as the previous tool specifications and return to step 1. If the condition of the laboratory equipment is in accordance with the initial conditions before borrowing then go to step 3.
- c) Laboratory assistants receive laboratory equipment that has been borrowed.
- d) An identity card that has been returned by the dean staff to student users.
- e) Done.

E. Security, Health and Safety Practices

1. Job Security / Practicum

The definition of work safety is safety that is related to engines, aircraft, work tools, materials and processing processes, the ground for the practicum and the environment as well as the methods of doing work.

Material security supporting elements include the following.

1. Work clothes / laboratory coats
3. Gloves
4. Shoes

Non-material security supporting elements are as follows:

1. User manual of the tool
2. Signs and danger signals.
3. Appeals

4. Responsible for security

Work Safety Purpose:

- ✓ Protecting practitioners and others in the workforce.
- ✓ Ensuring that every practicum process runs safely and efficiently.
- ✓ Ensure that the practicum process runs safely

2. Practicum Health

Occupational health is a health condition which aims to make the practicum obtain the highest health degree, whether physically, spiritually, or socially, with efforts to prevent and treat diseases or health problems caused by practicum and the environment as well as general diseases. Health in the scope of occupational health, safety and security is not only defined as a condition free from disease. According to the Indonesian Health Basic Law No. 9 of 1960, CHAPTER I article 2, a healthy condition is defined as the perfection of the physical, spiritual, and social conditions.

3. Work Safety

Work safety can be interpreted as a state of avoiding danger while doing work or practicum. In other words, work safety is one of the factors that must be done during the practicum process. Nobody in the world wants accidents to happen. Work safety is very dependent. On the type, form and environment in which the work is carried out.

The supporting elements of work safety are as follows:

- a. There are elements of occupational safety and health that have been described above.
- b. There is awareness in maintaining occupational safety and health.
- c. Be thorough in work or practicum
- d. Carry out work procedures / practicum with attention to occupational safety and health.

F. RELATED PARTIES

1. Chairman of the Department of Geography

2. Head of the Remote Sensing Technology Study Program

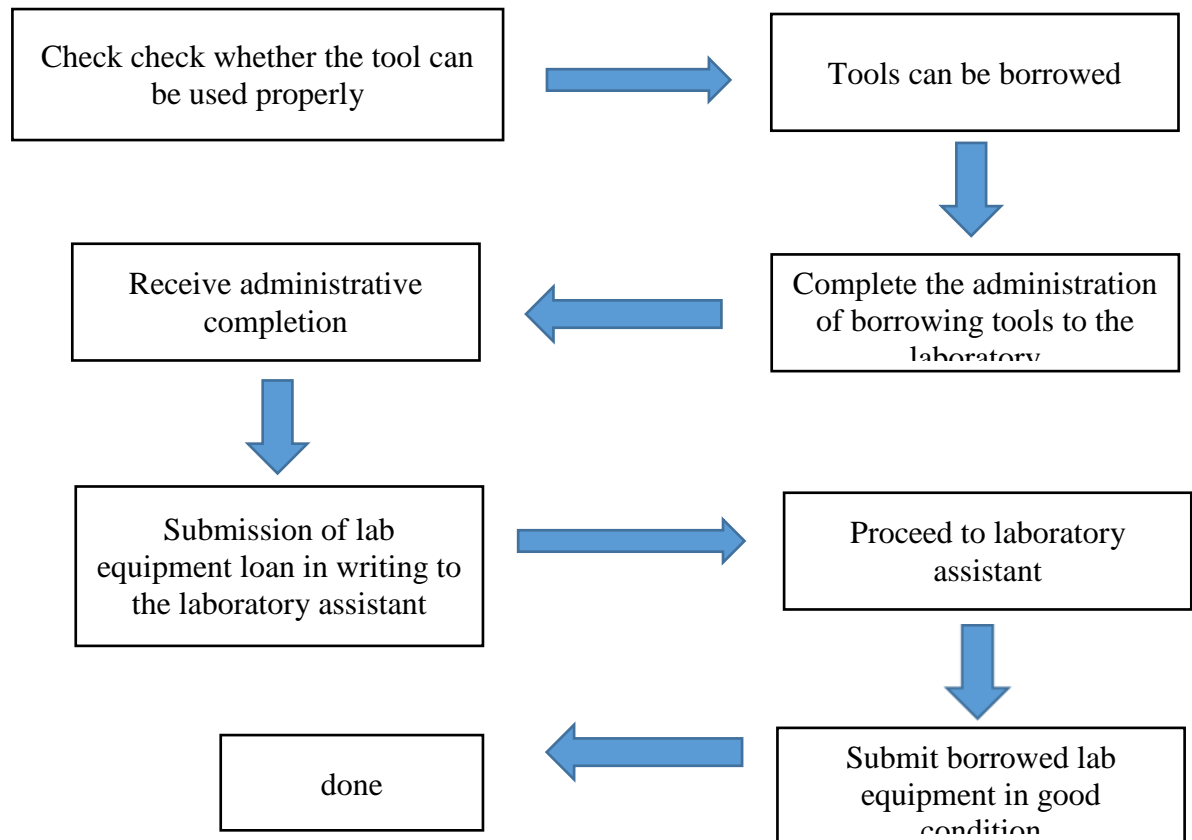
3. Staff staff

4 Users (Students, Lecturers and private parties)

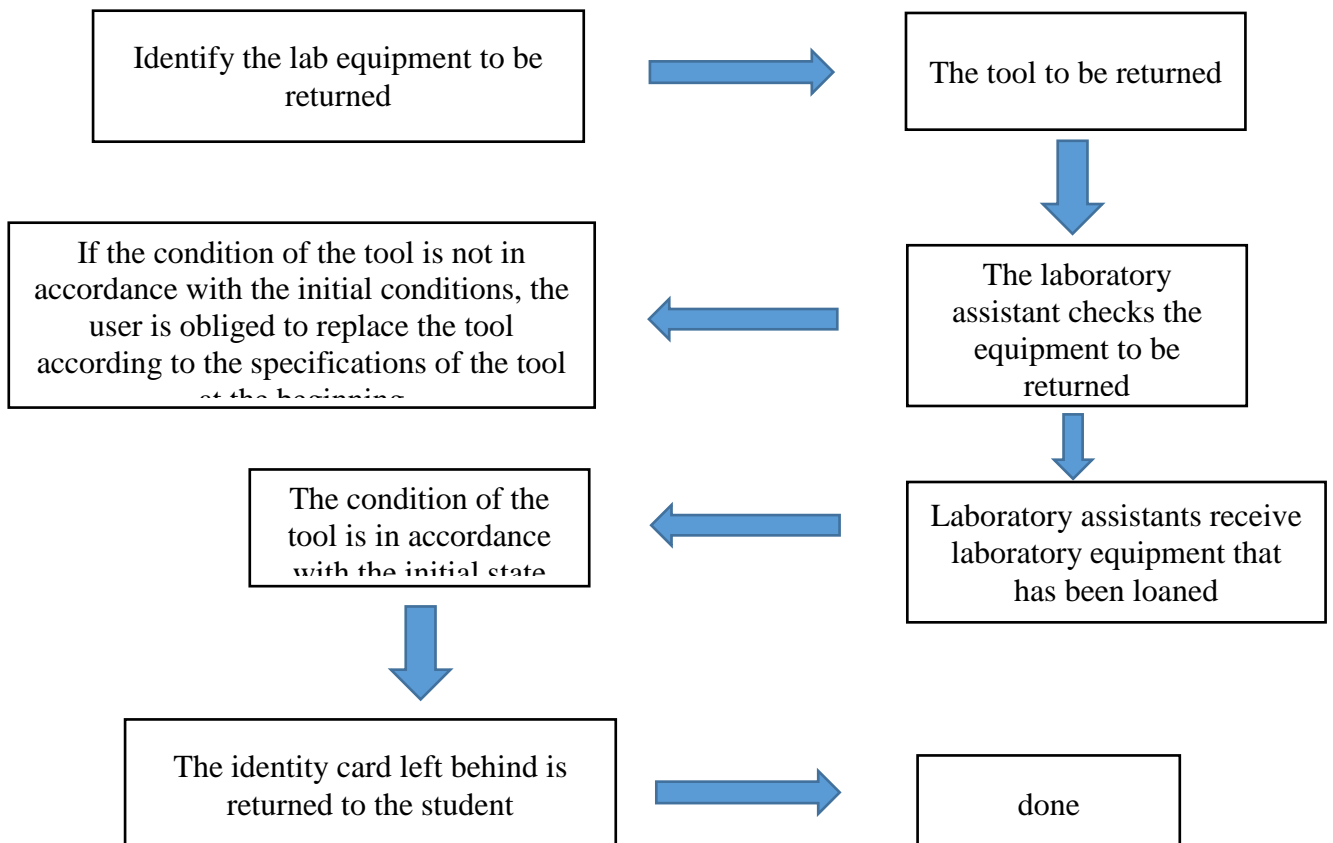
G.Flowchat Borrowing, Returning tools and Security, Health and Safety Practices

Laboratory By Students.

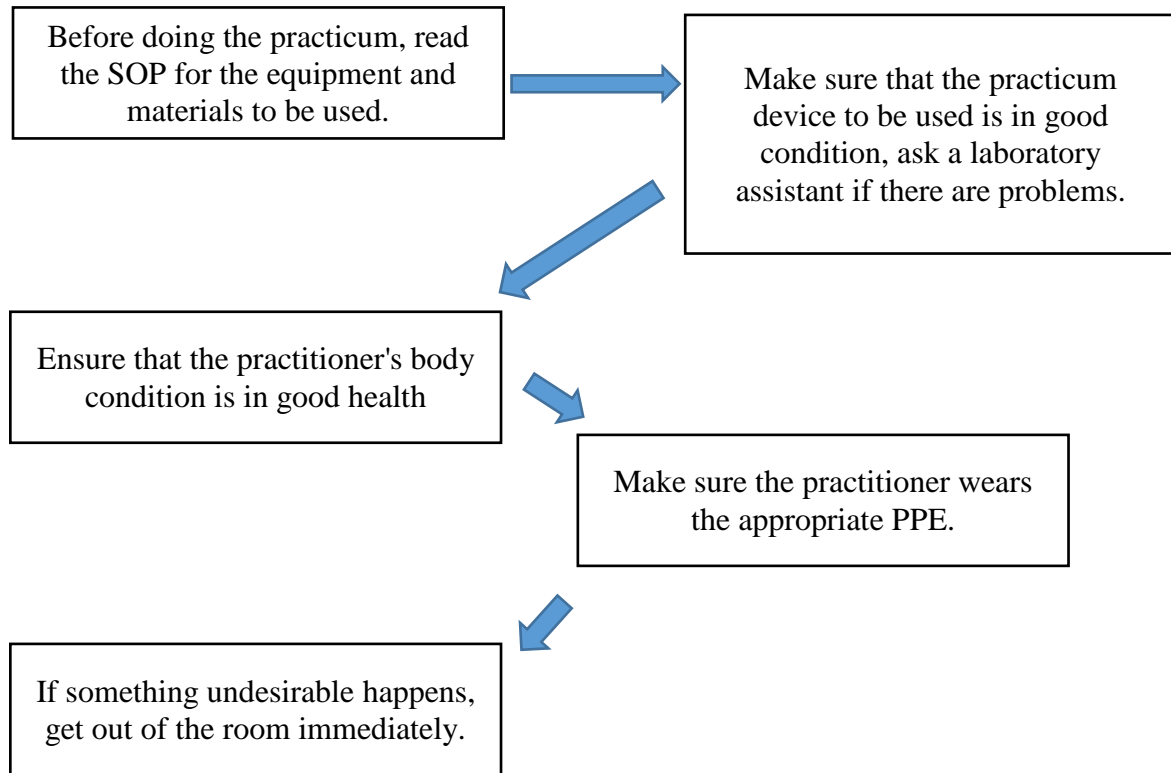
1. Lending Lab Equipment by Students



2. Return of Lab Equipment by Students



3. Security, Health and Safety Practices



F. Penalty

1. Practicum participants who do not comply with the rules and regulations are not allowed to enter the laboratory.
2. Practicum participants who come late, do not bring or enough practicum material (not according to the agreement), may not participate in practicum activities.
3. If the practicum participant moves and / or uses the practicum equipment that is not in accordance with what is stated in the practicum instructions and the tool lending file, the practicum activities carried out will be stopped and the practicum concerned is canceled.
4. Practicum participants who have not attended the practicum program for three times are declared invalid and must repeat in the following semester, unless there is a statement from the Head of the Department / Head of the Laboratory
5. Practicum participants who have lost, damaged or broken practicum equipment must replace according to the same equipment specifications, with the agreement between the Assistant, Practicum Assistant and the Head of the laboratory. The percentage of replacement of tools that are lost, damaged or broken is adjusted to the type of tool or the level of damage to the tool.
6. If the practicum participant up to the specified time period cannot replace the tool, the practicum participant may not take the final semester exam (UAS); and if the practicum participant is unable to replace the lost, damaged or broken equipment

due to the price of the equipment is expensive or the equipment is not available in the market, then the replacement value is determined based on the agreement between the Head of the laboratory, the head of the physical geography department and the practicum participant (or the Borrower).



STANDARD OPERATIONAL PROCEDURE (SOP)

Laboratory Administration.

1. Fill out the attendance list in the visit book
2. Wearing polite, neat clothes and shoes (no sandals are allowed)
3. Wear a lab coat and preferably long sleeves.
4. Be polite and courteous when in the room
5. Mutual respect between students, lecturers and those around the laboratory.
6. Keeping the laboratory clean and comfortable.
7. Not allowed to carry items that can trigger fires and sharp objects unless permitted during the learning process.
8. Not allowed to eat in the laboratory.
9. Not making noise in the laboratory.
10. Do not litter.
11. All collection of laboratory equipment and materials must be in accordance with the borrowing procedure.
12. the laboratory is opened according to a predetermined schedule
13. Read, understand, and understand every procedure in the use of laboratory facilities and services.



STANDARD OPERATIONAL PROCEDURE (SOP)

Laboratory Use Procedures

1. ACTIVITIES OF LECTURERS

- a. Lecturers coordinate with the head of the laboratory, through laboratory assistants.
- b. Laboratory assistants / laboratory assistants provide complete equipment to be used by lecturers.
- c. If possible, laboratory assistants / laboratory assistants can assist lecturers' activities.
- d. After the activity, lecturers and laboratory assistants / assistants tidy up the equipment to its original condition.

2. STUDENT SERVICES

- a. Students make a letter requesting the use of a physical geography laboratory for lecture purposes to the head of the laboratory with a copy of the head of the geography department of FIS UNP
- b. The head of the laboratory coordinates with the laboratory assistant / laboratory assistant and students with an interest in determining the laboratory use schedule.
- c. Students can ask the laboratory assistant for information about the media to be used, the completeness of the set, etc.
- d. Students get a usage schedule and use it at a predetermined time
- e. During use, before using the laboratory, students contact the laboratory / laboratory assistant to be able to prepare the equipment needed.
- f. Students carry out activities with supervision from laboratory assistants / laboratory assistants.
- g. After the activity, students put the equipment back in order to its original condition
- h. The laboratory assistant checks the completeness of the equipment after use.

3. LABORATORY MAINTENANCE

- a. The laboratory assistant checks all laboratory equipment every month.
- b. The laboratory assistant fills in the laboratory equipment condition form.
- c. The laboratory assistant records the damaged equipment and puts it on the damaged equipment form
- d. The laboratory assistant checks whether the equipment can be repaired on its own, repair it outside, or replace it with a new one
- e. The laboratory assistant notifies and asks for the approval of the head of the laboratory and the head of the geography department of FIS UNP.



PROCEDURES FOR USING SURVEY AND MAPPING TOOLS

1. Multi Station Leica MS 50



- How to use

1. The first step is to turn on the device by holding the power button 1-3 seconds then to the center of the appliance (stabilize the nivo)
2. Then create a new job and fill in the job data press f1 to save the job
3. To start measuring, when the tool is first standing, we can use the local coordinates by selecting the orientation of the backsight set. As for the following positions, we can select "known backsight" for the orientation.

Select Go to work! -> Settings -> Set orientation
Enter the chisel stand coordinates, then shoot the scene with the dist + set (F2 then F1).

4. To initiate scanning, get to work! -> survey + -> scanning -> OK

Then select create scan definition to define the object to be scanned.

5. Enter the name of the object to be scanned then select the method to be used and input the density of the point to be used then press F1. After that comes the point estimate and the estimated time of collection. The closer the meeting, the longer the time it takes, if it is too long or it can be replaced at the density of the point, then press F1 (Finish).

6. If you have made a scan definition, then the next step is to select start scan to start scanning, press F1 (start) then wait for the tool to finish scanning.
 7. To see the scan results on the MS50 board, you can enter the Jobs and Data menu-> View and edit data-> Scan -> select display (yes) on the scan results -> view
- How to care and storage of tools
 1. Do not expose it to direct sunlight
 2. Store the appliance in a location that is too hot or humid
 3. Store the appliance with the battery removed
 4. If the tribach is not used for a long period of time, lock the tribach and tighten the securing screw
 5. Do not use organic solvents like paint to clean non-metallic parts such as keyboards, it will cause discoloration of the appliance
 6. To clean the optical lens, wipe it with a soft cloth or tissue, slightly dampen it with water or a mild detergent
 7. Before installing the battery, check that the battery compartment is clean
 8. This tool box is designed to be waterproof, but even though it is waterproof as much as possible avoid being exposed to too long rain

2. AT-B2 flat sling tool



- How to use
 1. Remove the rubber band around the tripod leg and loosen the extension clamp screw.
 2. With the tripod closed, extend the tripod legs until the tripod head is about eye level, then re-tighten the clamp screws
 3. Extend the legs of the tripod so that the ends of the legs form a regular triangle on the ground.
 4. Make sure the tripod head is roughly level. Fix the tripod shoe firmly to the ground.

5. Hold the instrument by the tripod head and tighten the center screw.
 6. When using the round head tripod, loosen the center screw slightly, hold the base of the plate with both hands and slide it over the tripod head until the bubbles approach circular level.
 7. Tighten the middle screw
 8. Adjust the abc screw until the nivo bubble is in the circle
 9. Use vizir to aim the objective lens at the target
 10. Gradually rotate the eyepiece until just before the reticle crossover becomes blurred.
 11. Use a horizontal smooth motion screw to center the target in the field of view. Turn the focus knob to focus on the target.
 12. Looking through the telescope, slide your eyes slightly horizontally and vertically.
 13. If there is no parallax between the target image and the reticle, measurement preparation is complete
- How to care and storage
 1. Wipe off moisture completely if the instrument gets wet during survey work.
 2. Always clean the instrument before returning it to the bag. Lenses require special care. Clean with a clean cloth first to remove small particles. Then, after applying a small amount of condensation by inhaling the lens, wipe it with a clean, soft cloth or lens tissue.
 3. To clean the instrument or carrying case, lightly dampen a soft cloth with a mild detergent solution. Wring out the remaining water until the cloth is slightly damp, then wipe the surface of the unit carefully. Do not use organic solvents or alkaline cleaning solutions.
 4. Check the tripod for loose and loose screws. • If you have trouble with the swivel, screw or optical part (eg lens), please contact your local dealer. • Check the instrument for proper adjustments periodically to maintain instrument accuracy.

3.Nikon Nivo 5M Total Station



- How to use
 1. Set up the TS tool at the STN point (the point where the tool stands, for example point 2) and do the centering by adjusting the nivo of the box and the nivo of the tube until it is balanced.
 2. Build the prism of each polygon at point 1 (for Backsight = BS) and point 3 (for Foresight = FS), then do the centering.
 3. Create a job
 4. Setting measurement by holding MSR button 1 a few seconds then setting target, const, mode, ave, rec mode.
 5. The tool is ready to be used for measurement activities

- Care and Storage Method
 1. Do not leave the instrument in direct sunlight or in a closed vehicle for extended periods of time. Overheating of the instrument can reduce its efficiency.
 2. If the instrument has been used in wet conditions, remove moisture and dry the instrument immediately before returning the instrument to the bag. This instrument contains a sensitive electronic assembly which is well protected from dust and moisture. However, if dust or moisture gets on the instrument, serious damage may occur.
 3. Sudden temperature changes can cover the lens and drastically reduce the measured distance, or cause electrical system failure. If there is a sudden change in temperature, leave the instrument in a closed case in a warm location until the instrument temperature returns to room temperature.
 4. Do not store the instrument in hot or humid places. In particular, you should store the battery in a dry place at temperatures less than 30 ° C (86 ° F). High temperature or excessive humidity can cause mold to grow on the lenses. It can also cause the electronics assembly to deteriorate, and lead to instrument failure.
 5. Save the battery with the battery run out.

6. when storing the instrument in an area exposed to extremely low temperatures, keep the carrying case open.
7. When adjusting the vertical tangent screw, top tangent screw, or leveling screw, keep it as close as possible to the span center of each screw. The center is indicated by a line on the screw. For the final adjustment of the tangent screw, turn the screw clockwise.
8. The carrying case is designed to be waterproof, however you should not expose it to rain for extended periods. If exposure to rain is unavoidable, make sure the carrying case is placed with the Nikon nameplate facing up.

4.Dji Phantom 4 RTK



- How to use
 1. Installing Propellers
 2. Turn on the remote control
 3. Engine start
 4. Raise the drone (fly)
- Maintenance
 1. Always clean the drone using a cleaning kit
 2. Store the drone in a dry place
 3. Use a propeller cover
 4. Always charge the battery fully
 5. Do a pre flight before actually flying the drone to make sure the drone is in good condition



STANDARD OPERATIONAL PROCEDURE (SOP)

Practicum implementation.

1. Practical equipment

The following equipment must be provided and carried at all times will do practicum.

- a. Preliminary task.
- b. Wear a lab coat and preferably long sleeves.
- c. Dress neatly, politely, and with shoes (can't wear sandals).
- d. Other equipment to help the smooth running of your work, including: stationery, cloth, tissue, soap / detergent, etc.
- e. A practicum journal that contains the title of the experiment, the aims and principles of the experiment, the theoretical basis and the workings of the experiment in the form of a work scheme to simplify the sequence of work to be carried out.
- f. Observation table that contains working points and columns to fill in temporary observations / results.

2. Work flow and laboratory regulations

- a. All the practitioners on the day of the practicum, wait for the time to enter the laboratory, then enter the laboratory in an orderly manner.
- b. At the appointed time, practice immediately enter, collect previous practicum reports and fill out the attendance / attendance list, then headed to their respective desks.
- c. Required to follow the explanation from the lecturer / assistant
- d. Submit a bill for borrowing laboratory equipment to laboratory personnel.
- e. The assistant will help to arrange the requirements for the substances / reagents needed for the experiment on that day.
- f. After receiving the practical explanation, the practitioner returns to their desks, followed by borrowing tools and taking the necessary chemicals in the space provided in turns.
- g. Do work calmly, quickly, and orderly.
- h. Whenever you face difficulties or doubts, do not hesitate to ask the group assistant.
- i. Equipments that are shared will be placed by officers at designated places.

- j. Read and understand experimental procedures while working in the laboratory. If you don't understand, ask the assistant or lecturer who coordinates the practicum. Do not work without understanding what the work procedure means.
- k. Record and document the important stages of work procedures carried out including the results obtained.
- l. After completing the experiment, report and submit the results of the experiment.
- m. Make a temporary report that the assistant accepts.
- n. Return all tools borrowed on that day in a clean and dry condition, checked by the officer regarding their integrity and quantity. Also report all damage to the equipment you do to the laboratory staff.
- o. The reaction mixture / substance so that it is transferred to a container / place that has been provided with a well closed and fully labeled. Keep it from spilling or burning.
- p. Clean the table and floor where you work before you go home. If there is an experiment that has not been completed and needs to be continued the next day, it must be approved by the practicum assistant and lecturer.
- q. After completing the practicum, the practitioner must have checked:
 - Have all the equipment borrowed on that day been returned?
 - Is your work place / desk (and floor) clean again?
 - Has the assistant accepted your provisional report?
 - Have the water, electricity, and fan taps been turned off?



STANDARD OPERATIONAL PROCEDURE (SOP)

Borrowing Tools by Students

Purpose To provide a reference for students regarding the procedures for borrowing tools and using chemicals.

1. Students who have obtained permission to enter the laboratory can borrow tools to carry out their research.
2. Borrowing tools hand over the tool receipt card by the student concerned to the laboratory assistant, the laboratory assistant checks the availability of the tools needed. The tools are returned when the practicum is finished. If there is a missing / broken tool, it is required to replace it with the same equipment specifications.
3. The chemicals used can be collected on weekdays, by submitting the material bill to the laboratory assistant and recording the use of chemicals during the practicum in the chemical usage book.



STANDARD OPERATIONAL PROCEDURE (SOP)

Borrowing Equipment by Outside Parties

1. Outside parties apply for borrowing tools and use of materials to the Head of the Department.
2. The Head of the Department accepts requests for borrowing tools and the use of materials from outside parties.
3. The Head of the Department coordinates requests for borrowing tools and material needs to the laboratory assistant.
4. The laboratory assistant checks the condition of the tools and materials according to the application for borrowing tools and materials submitted by outsiders. If there is a device that is not suitable, the laboratory assistant will inform the outside party. If the equipment matches what is needed / is not being used, it can be borrowed.
5. The laboratory assistant prepares tools and materials in accordance with the application for borrowing tools and material requirements.
6. The laboratory assistant determines the period for borrowing the equipment.
7. The laboratory assistant hands over the necessary tools and materials to outsiders.
8. Outside parties inspect the tools and materials received. If it is not suitable, the outside party will report it to the laboratory assistant. If it is suitable, the tools and materials can be carried.
9. The outside party returns the tool within the specified time period.
10. The laboratory assistant checks the borrowed equipment. If the condition is good, it is accepted. If the condition is damaged (broken, etc.) or lost, the outside party must replace the equipment with the same specifications.
11. The outside party pays the cost of equipment rental and the cost of purchasing materials.
12. The laboratory assistant keeps the tools.



STANDARD OPERATIONAL PROCEDURE (SOP)

Borrowing Tools for Research

1. The researcher makes a letter of application for the use of the laboratory for research (research permit).
2. Researchers submit research permits and research proposals to the laboratory assistant.
3. The laboratory assistant determines the research schedule.
4. Researchers receive a schedule of research implementation from the laboratory assistant.
5. Researchers fill out the form for borrowing tools and using materials for research to the laboratory assistant.
6. The laboratory assistant receives the tool borrowing form and the use of materials that have been filled in by the researcher.
7. The laboratory assistant prepares the tools and materials needed for research.
8. Researchers conduct research according to a predetermined schedule.
9. After the research is complete, the researcher returns the tool to the laboratory assistant.
10. Researchers pay the cost of renting the equipment and the use of materials.
11. The laboratory assistant checks the returned equipment to ensure the condition of the equipment. If the tool is in good condition, it is accepted by the laboratory assistant, if the tool is in a damaged condition, it is returned to the researcher to be replaced.
12. The laboratory assistant keeps the tools.



STANDARD OPERATIONAL PROCEDURE (SOP)

Student or Lecturer Permit to Enter the Laboratory

A. For students:

1. Students fill out the biodata form and permission letter signed by the supervisor.
2. Biographies and permits are submitted by students to the Head of the Laboratory Assistant.
3. The Head of Laboratory grants permission by signing a permit to enter the laboratory of the student concerned
4. The laboratory assistant will divide the lab workspace / locker according to the topic of the student's research field.

B. For lecturers:

1. Lecturers fill out the biodata form and permission letter.
2. Biodata and permission letter submitted by the lecturer concerned to the Head of the Laboratory.
3. The head of the laboratory gives permission by signing the permit to enter the laboratory of the lecturer concerned
4. The laboratory assistant will divide the lab work space / locker according to the lecturer's research topic.



STANDARD OPERATIONAL PROCEDURE (SOP) Occupational Health and Safety (K3) in the Laboratory

A. General Work Safety Instructions in the Laboratory

1. Laboratory users are required to wear a laboratory coat / neat clothes and closed footwear or shoes.
2. It is strictly prohibited for laboratory users to smoke, eat and drink in the laboratory room.
3. All work and use of hazardous chemicals with toxic or inhalation-stimulating vapors should be carried out in an acid cupboard or outdoors.
4. Be careful with all heating work. Avoid splashing or inhaling vapors while working.
5. Keep all volatile organic compounds, such as: alcohol, ether, chloroform, acetone, and methylated spirits from open flames because of flammable materials. We recommend that you warm up using a waterbath.
6. When heating using an open flame, light a methylated spirits burner (bunsen) with a regular lighter, do not light it with another sparkling burner that is already lit, to avoid burning.
7. Put out the fire in a methylated burner by covering the wick, do not extinguish the fire by blowing to prevent fire or fire outbreaks.
8. Do not try to taste chemicals or smell smoke or steam directly from the mouth of the test tube. However, first fan the steam towards the face.
9. Never inhale a pipette by mouth to take strong acid or alkaline solutions such as: HNO_3 , HCl , H_2SO_4 , glacial acetic acid, NaOH , NH_4OH , and others. Use a pipette with a suction ball to transfer these or other toxic materials into the tool to be used.
10. Immediately close the chemicals provided in the closed bottle to prevent inhalation of the substances.
11. Avoid spilling chemicals, especially concentrated acids or bases, on the work table or floor. If this happens, report it immediately to the laboratory assistant or laboratory staff.

12. In the event of contact with hazardous, corrosive or toxic chemicals, rinse immediately with plenty of water. Then immediately report it to the laboratory assistant or laboratory staff.
13. Do not rub eyes or other limbs with hands that may have been contaminated with chemicals.
14. Collecting liquids or solutions that have been used (liquid waste) in jerry cans of waste storage according to the characteristics of the liquid waste.
15. Leave the table and work tools as clean and tidy as before.

B. Possible Hazards in the Laboratory

1. Fire Hazard

Risk of fire (source: chemicals, stove) disinfectants which may be flammable and toxic. A fire occurs when there are 3 elements together, namely: oxygen, combustible materials, and heat.

As a result:

- The onset of fires with burns resulting from minor to severe, even death.
- Poisoning arises due to carelessness.

Prevention:

- Provide fire extinguisher in every room.
- Good storage system for combustible materials.
- Control of the possibility of a fire.
- Fire alert system
 - A manual that allows one to immediately declare a danger sign.
 - Automatic which finds fires and provides alerts automatically.
- There is a way to save yourself.
- Fire fighting and equipment.
- Proper and safe storage and handling of chemicals.

2. Electrical Hazard

- Pay attention and study the places of the power source (socket and circuit breaker) and pay attention to how to turn it on and off.

If you see any damage that is potentially dangerous, report it to the laboratory assistant or laboratory staff.

- Avoid accidental areas or objects that could pose an electric hazard (electric shock / shock), for example chipped netting cables, etc.
- Do not do something that could pose an electrical hazard to yourself or others.
- Dry wet body parts such as sweat or the rest of the ablution water.
- Always be aware of electrical hazards in every activity in the laboratory.
- Accidents due to electrical hazards that often occur are electric shocks.

The following are things a laboratory user should follow when this occurs:

- Do not panic.
- Turn off all electronic equipment and power sources.
- Help laboratory users who have been electrocuted to remove themselves from the power source.
- Notify and ask for help from laboratory assistants or people around you about the occurrence of accidents due to electrical hazards.

3. Chemical Hazards

All chemicals can have a negative impact on health. The most common health problem is occupational contact dermatosis which is generally caused by irritants (ammonia, dioxan) and only slightly due to allergies (ketones).

Toxic substances (trichloroethane, tetrachloromethane) if swallowed, inhaled or absorbed through the skin can cause acute or chronic illness, even death. Corrosive materials (acids and bases) will cause irreversible tissue damage in the exposed area.

Prevention:

- "Material Safety Data Sheet" (MSDS) of all chemicals available for all laboratory personnel to know.
- Using personal protective equipment (eye protection, gloves, apron, laboratory coat) properly.
- Using respiratory protective equipment (masks) properly.



STANDARD OPERATIONAL PROCEDURE (SOP)

Laboratory Waste Handling.

Purpose Provide a reference for students and laboratory assistants to do laboratory waste handling

1. Students who carry out practicum / TA dispose of the remaining waste of their activities into the conductor general provided by the laboratory assistant.
2. Periodically the laboratory assistant will collect the full conductor of the waste collection area.
3. A new (empty) conductor is provided by the laboratory assistants in each laboratory.



STANDARD OPERATIONAL PROCEDURE (SOP)

Making Laboratory Free Letters

Applications are made directly in the laboratory.

1. Students fill out the information form that is free of laboratory use.
2. Students submit an application that is free of laboratory use to the laboratory assistant
- .3. The laboratory assistant conducts data check, whether the student has returned all equipment loans and completed other obligations while carrying out practicum or research, if not the student must complete all laboratory administration first.
4. The laboratory assistant approves the free application form for Laboratory Use for Students who have completed all loans and payments at the lab.
5. Students submit a free form of Laboratory Use to the Head of the Lab to be signed.



Survey and Mapping Laboratory Free Information

Student / I data below;

Name :

NIM :

Date and place of birth :

Address :

Study program :

The student / I mentioned above does not have the responsibility for the tools / materials belonging to the Cartography and Photogrammetry Laboratory of the State University of Padang

Thus this letter of decree should be used properly.

Padang, 20

Head of Geography laboratory

Sgd

(.)

...)

NIP.



Loan Application Letter
Laboratory Equipment By Students

Dear
Head of Laboratory
Physical Geography

With respect,

We, the undersigned

Name :

NIM :

Apply for laboratory equipment for the geography study program to carry out testing
(thesis / research / community service) at:

Laboratory :

Borrowing time :

Borrowing time :

Used in :

Borrowed equipment 1.

2.

Thank you for your willingness and willingness to give permission.

Padang,
Who filed

(.....)

NIM



Borrowing Minutes
Laboratory Equipment
By Students

On this day, date located in the
laboratory

The handover of the laboratory equipment borrowing has been carried out below:

1.
2.
3.
4.

After testing the tools above, we all know and state that all the tools tested are in good
condition and functioning normally.

Who submit,

Lab assistant

Padang,

College student,

(.....)

NIP

(.....)

NIM

