

General Laboratory Policy

- ★ Webpage for general chemistry experiment specifications, experimental demonstration videos, and other resources:
<https://teaching.ch.ntu.edu.tw/gclab/en>



The general chemistry laboratory is a connection between theory and practice. Through the hands-on activities, you will learn the scientific method and problem-solving strategy. Because of the inherent hazards in the chemistry lab, one should follow the lab policy and the guidance from lab instructors.

1. Course prerequisites and attendance rules:

- (1) You may take this laboratory course only if you have taken, or are currently taking "General Chemistry".
- (2) The first week of the laboratory is registration and safety training. Those who fail to attend will be deemed to have dropped the course and will not be included in the course enrollment list. Those who have not completed the safety training are not allowed to enter the student laboratory for experiments.
- (3) After safety training, you ought to fill in and submit the "Lab Safety Certification and Identification" to the lab instructor in the next lab session.
- (4) Course introduction and safety instructions at the beginning of the experiment are crucial for laboratory safety. Be punctual for every lab session, otherwise you may miss important notifications from the instructor. Students who arrive after the instructor's lecture will not be allowed to enter the class to conduct experiments and will be recorded as absent.
- (5) If you cannot attend the lab session, except for sick leave, relevant certificates must be issued in advance, and leave can only be requested with the consent of the instructor. Those who fail to show up without a valid reason will be deemed absent. If you are absent from the laboratory three times, you will fail the course and need to retake it afterward.
- (6) If you miss a lab session, whether due to leave or absence, please contact the instructor as soon as possible to arrange a makeup session.
- (7) Do not leave the laboratory without permission during an experiment.

2. Grading:

- (1) Attendance and performance of laboratory: 50%
- (2) Laboratory report: 50%

3. Prelab report:

Study the experiment thoroughly before entering the lab; handwrite a prelab report on lined A4 paper. Submit the report according to the guidelines (to be announced in the first session). The prelab report should contain:

- (1) **Objective:** Describe the objective concisely.
- (2) **Introduction:** Indicate the important theory, laws, and chemical equations.
- (3) **Chemicals:** Tabulate the chemicals' important properties and toxicity. Consult reference books or other materials, such as *The Merck Index* or Safety Data Sheet (SDS), for relevant information. Indicate the reference sources.
- (4) **Procedures:** Outline the experimental steps, or in the form of a flowchart.

4. Laboratory record:

- (1) Write down all observations (such as color changes, precipitation, exothermicity/endothermicity), the experimental data with proper significant figures and units, and the actual procedures in the experiment.
- (2) When finishing the experiment, hand it to the instructor to check and sign.

5. Laboratory report:

- (1) Accomplish your data analysis after the laboratory. The calculation process, data results, error review, and specific conclusions should be listed in detail.
- (2) The prelab report, laboratory record, and data analysis should all be written on lined A4 paper, sorted and stapled to form a complete laboratory report, and your name and group number should be written on the first page.
- (3) Except for data tables and figures that are produced using computers, the rest of the reports are handwritten.
- (4) Laboratory report example on website:
<https://teaching.ch.ntu.edu.tw/gclab/en/pdf/lecture/00.3-111-WEB-ReportGuidelines-1015.pdf>

6. Safety policy:

- (1) The laboratory is a place for serious work. To ensure safety, do not joke around, lose your temper, smoke, eat, drink, or chew gum while in the lab.
- (2) During the lab session, wear safety goggles to protect your eyes. Do not wear contact lenses or sunglasses. Do not take off your goggles during the experiment.
- (3) During the lab session, wear cotton lab coats and long trousers, and tie long hair to prevent hair and skin from coming into contact with chemicals.
- (4) Wear closed-toe shoes to prevent shattered glass from hurting your feet. Slippers or sandals are not allowed.
- (5) Students who do not wear clothing following safety regulations must leave

the laboratory and will be regarded as absent.

- (6) Mobile phones, tablets, and other electronic devices are not allowed during the lab session. Turn them off and store them properly to ensure safety.
- (7) When handling chemicals, follow closely the measurements indicated in the lab manual. Do not waste them and increase environmental pollution.
- (8) To prevent fires, books or paper must not be used as windshields or to cushion strong-heating devices.
- (9) Students must not adjust the oven temperature without permission.
- (10) Lab equipment and chemicals must not be removed from the lab.
- (11) If there is an accident or other unforeseen circumstances during the experiment, respond swiftly and calmly and inform the instructor immediately.
- (12) Before leaving the laboratory at the end of the experiment, clean up the equipment and lab bench, return the equipment to their respective places, and wash both hands.
- (13) Familiarize yourself with the location and usage of the safety devices in the lab, such as fire extinguisher, fire sand, fire blanket, chemical adsorbent, emergency eyewash fountain and shower, and the first aid kit.

7. Waste disposal:

- (1) Solid waste, e.g. paper and matches, should be thrown into designated bins.
- (2) Broken glassware must be put into the designated recycling cartons.
- (3) Do not use a thermometer as a stirrer. Should you break a mercury-in-glass thermometer, inform the lab instructor immediately. Mercury vapor is toxic; hence, mercury must be disposed of in a specific manner.
- (4) Liquid waste containing heavy metals or organic solvents must be collected for treatment before disposal. Pour such liquid waste into designated recycling bins, not in the sink.
- (5) Neutralize or dilute excess acid or base before pouring them into the sink to avoid corroding the sink and plumbing as well as polluting the environment.

8. Students on duty:

There will be a rotational duty roster. After the experiment, students on duty have to help:

- (1) Clean up the public areas, blackboards, scales, and desks; sweep the laboratory and corridors; dispose of garbage and laboratory wastes.
- (2) Inventory the equipment or chemicals distributed at the beginning of the experiment.

First Aid

1. If a toppled alcohol lamp leads to a fire, quickly cover the fire with a wet dishcloth.
2. If acid, base, or corrosive chemicals are splashed into the eye, flush the eye with running water for at least 20 minutes immediately. Seek treatment at a clinic or hospital if the case is severe.
3. If the skin comes into contact with strong acid or base, rinse with running water immediately. Seek treatment at a clinic or hospital if the case is severe.
4. For cuts from broken glass, first remove any shards and then rinse the cut with clean water. Apply iodine tincture to the wounded area and cover with a plaster. For severe cuts, after removing shards, apply sterile gauze to the wound to apply pressure to stop bleeding, and go to a hospital for treatment as soon as possible.
5. Treat fire burns according to the following principles: **rinse** with cool running water for 15~30 minutes; **remove** attached pieces of clothing carefully; **soak** in cool water for 15~30 minutes; **cover** with a clean cloth. The very first step to take is to run plenty of water over the burnt area until no burning pain is felt. Seek treatment at a clinic or hospital if the burn is severe.
6. If somebody suddenly faints due to poisoning, carefully bring the person to a sitting position on a stool, face downwards, and spray with cold water. If this does not cause the person to regain consciousness, hold ammonia water near the nostrils to stimulate the respiratory system.
7. If a toxic substance is inhaled or touched, find out how to treat the poison and act accordingly. If self-treatment is not possible, seek medical treatment.
8. If a mercury-in-glass thermometer is broken, first collect the larger droplets of mercury in a beaker or Petri dish. Cover with water to lower its vapor pressure. Then cover the surface with something heavy to prevent it from spilling again. Quickly cover the remaining droplets of mercury with sulfur powder to convert it to HgS. This can be swept up a few hours later.
9. If an accident occurs, carry out first aid quickly and calmly, and report to the lab instructor immediately. If you need to go to the infirmary or hospital for treatment, you should be accompanied by a classmate or teaching assistant.

Emergency Phone Numbers

NTU Students' Health Center: 3366-9595

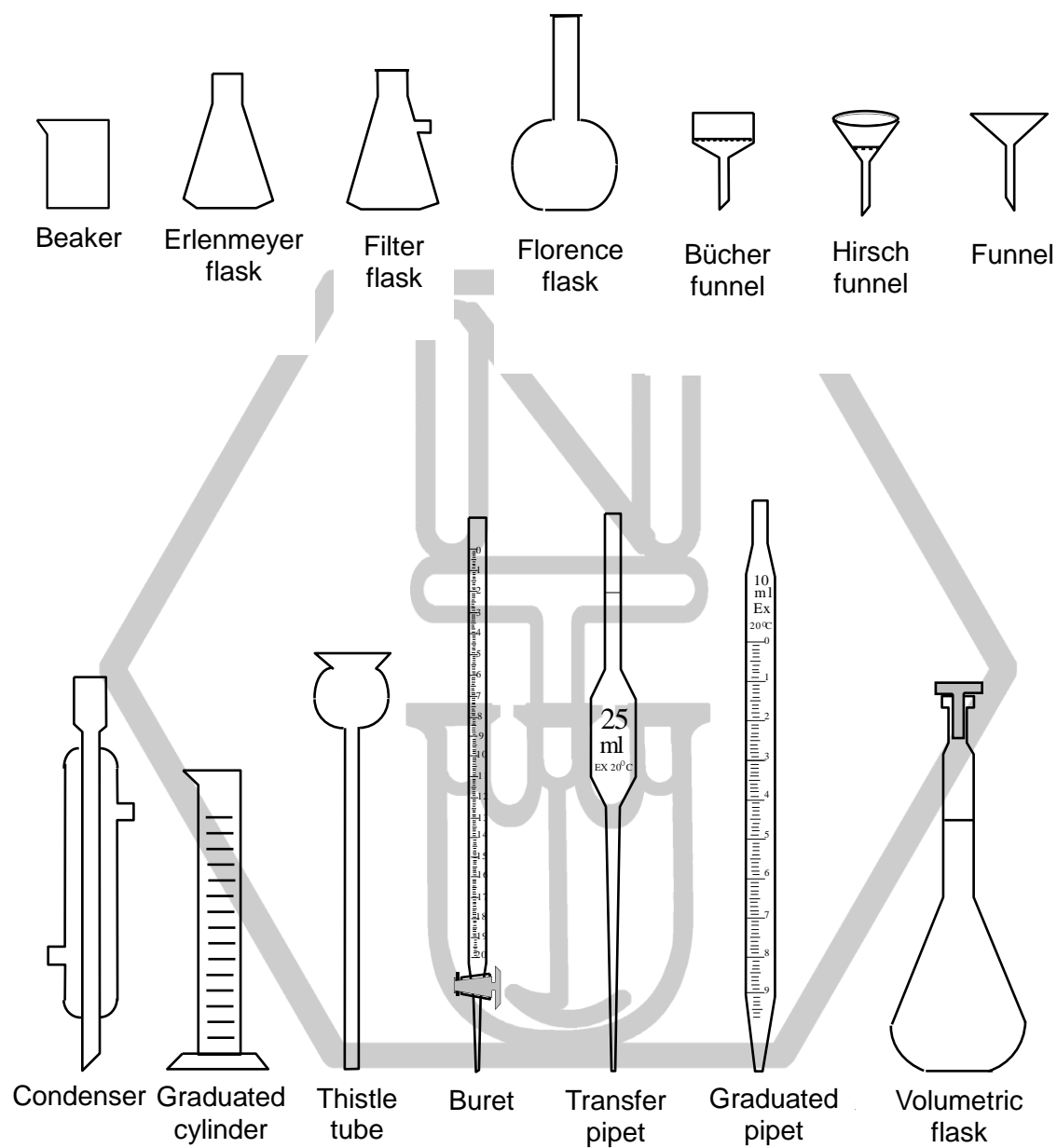
NTU Hospital ER: 2312-3456 #65651

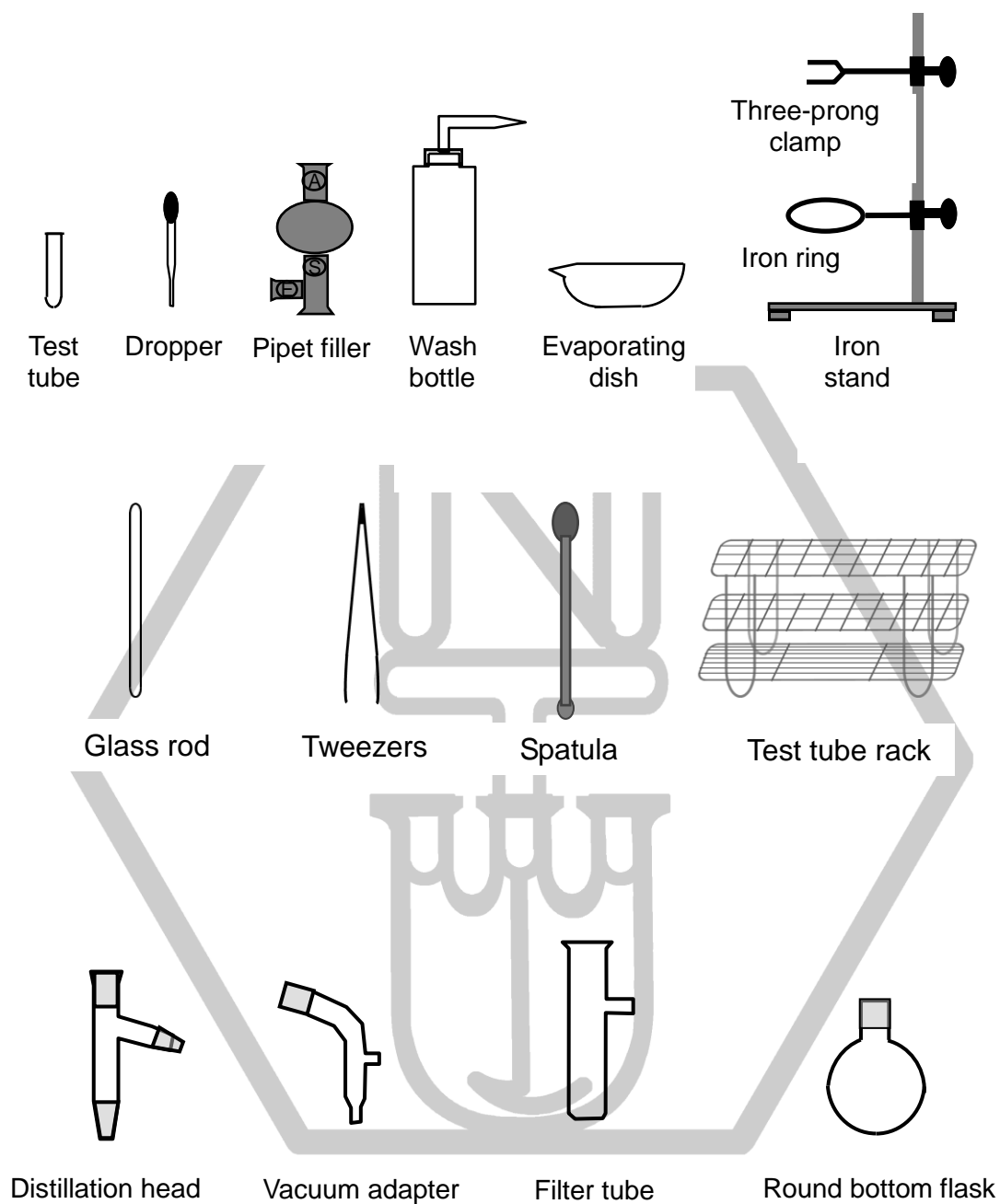
Tri-Service General Hospital ER: 2365-9055 #11306~11308

Antidote Control Center: 2871-7121, 2875-7525 #821

Emergency & Fire Department: 119










Laboratory Apparatus





The Globally Harmonized System of Classification & Labelling of Chemicals, GHS

GHS is implemented to align with the “United Nations Globally Harmonized System of Classification and Labeling of Chemicals”. The classification and labeling of chemical substances in laboratory workplaces fully adopt the GHS system to enforce hazard classification and labeling of chemicals, provide the right to know about chemical safety, strengthen the safety management mechanism of chemical operations, and align with international standards. (Occupational Safety and Health Administration, Ministry of Labor’s GHS website: <http://ghs.osha.gov.tw>)

GHS pictogram	 Health Hazard	 Flammable	 Serious Health hazard	 Corrosive	 Hazardous to the Environment
GHS pictogram	 Toxic	 Oxidizing	 Explosive	 Compressed Gas	

Lab Safety Certification and Identification

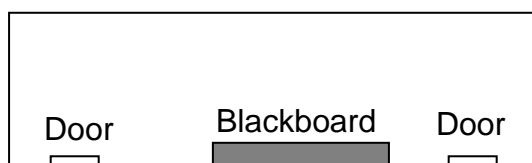
Photo

1. During the lab session, I will wear safety goggles to protect my eyes and will not wear contact lenses.
2. During the lab session, I will wear a laboratory coat and trousers. I will wear shoes that protect the entire foot and will not wear slippers or sandals.
3. I shall follow the safety rules and regulations in the lab.

I have read and understood the rules listed above.

Indicate the locations of the following items in the lab:

- (A) Fire extinguisher; (B) Fire blanket; (C) Eye wash fountain; (D) Safety shower;
(E) First aid kit; (F) Chemical absorbent; (G) Fume hood



Signature: _____ Cell: _____

Student ID: _____ Group No.: _____

Dept: _____ Date: _____

Emergency Contact: _____

Contact cell: _____

Phone numbers of preparation laboratory: (02) 3366-4195, 3366-4196