Objectives, Policies and Safety Guidelines

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1 Please read and study all the sections of this document. Sing and turn in the last page (5/5) before your first lab session of the term.
1 Overall Objective
The Materials Engineering 1 Laboratory is an integral component of the M2010 Behavior of Materials course. The lab will assist students in the pursuit of the following objectives:

- Understanding the importance of materials knowledge in industry.
- Developing analytical and experimental skills through the execution of experiments and observation.
- Using knowledge about materials to evaluate, design and/or optimize mechanical components or systems.
- Enhance analytical and experimental skills leading to potential proposals for research and technological innovation.

2 Specific Objectives
- The student will acquire skills for basic mechanical characterization of engineering materials.
- Understand the use and limitations of the equipment commonly used in industry.

3 Laboratory Policies
a) It is the student's responsibility to arrive at the laboratory with their printed practice, otherwise this practice will not be accredited.
b) The student will make a pre-report that will be delivered at the beginning of each laboratory session. The pre-report will be done by hand and if it is the case it should include the bibliography used.
c) During the laboratory session the student will have to prepare a report with the points that indicate the practice plus what the instructor asks for during each session.
d) The grade of the practice will include the participation of the student and the results obtained.
e) The report will be delivered at the end of the lab session. If the student does not attend the laboratory, it will have a null rating in practice. THERE ARE NO EXCEPTIONS.
f) In the case of a copy of pre-reports, the qualification of the practice will be annulled to the students involved.
g) It is the student's responsibility to do the practices with the safety rules indicated by the instructor.
h) After 10 minutes of the start of the session, it will be considered a fault and the pre-report will not be taken into account.
i) Missing a lab session is equivalent to a null grade in that practice.
j) Only in medical cases or with a justification authorized by the instructor of the laboratory will be able to attend other sessions, these authorizations must be made BEFORE the day of their practice.
k) All material turned-in for grading should be hand written in ink (pen) and the declaration of authenticity signed and dated.

4 Safety in the Laboratory
All students must read and understand the information in this document with regard to laboratory safety and emergency procedures prior to the first laboratory session. Your personal laboratory safety depends mostly on you. Efforts have been made to address situations that may pose a hazard in the lab, but the information and instructions provided cannot be considered all-inclusive. Students must adhere to written
and verbal safety instructions in all labs all the time. Since additional instructions may be given at the beginning of laboratory sessions, it is important that all students arrive at each session on time. With good judgment, the chance of an accident in this laboratory is very small. Nevertheless, research and teaching workplaces (labs, shops, etc.) are full of potential hazards that can cause serious injury and/or damage to the equipment. Working with hazardous substances or equipment while being alone and unsupervised in laboratories is forbidden. With prior approval, at least two persons should be present so that one can shut down equipment and call for help in the event of an emergency. Safety training and/or information should be provided by a faculty member, teaching assistant, lab safety contact, or staff member at the beginning of a new assignment or when a new hazard is introduced into the workplace.

4.1 Emergency Response
   a) It is your responsibility to read safety and fire alarm posters and follow the instructions during an emergency.
   b) Know the location of the fire extinguisher, eye wash, and safety shower in your lab, and know how to use them.
   c) Notify your instructor of lab staff immediately after any injury, fire, explosion or spill.
   d) Know the building evacuation procedures.

4.2 Common Sense
Good common sense is needed for safety in a laboratory. It is expected that each student will work in a responsible manner, and exercise good judgment and common sense. If at any time you are not sure how to handle a particular situation, ask your Instructor or Lab Technician for advice. DO NOT TOUCH ANYTHING WITH WHICH YOU ARE NOT COMPLETELY FAMILIAR. It is always better to ask questions than to risk harm to yourself or damage to the equipment.

4.3 Personal and General Laboratory Safety
   a) Never eat or drink while in the laboratory.
   b) Never run, do hasty actions nor play in any lab.
   c) Read labels carefully.
   d) Do not use any equipment on your own unless you are trained and approved as a user.
   e) Wear safety glasses or face shields when working with hazardous materials and/or equipment.
   f) Wear gloves when handling any hazardous materials, toxic agent or hot materials.
   g) Shorts and sandals should not be worn in the lab at any time. Closed footwear is required when working with the heat treatment furnaces or other heavy equipment.
   h) If you have long hair or loose clothes, make sure it is tied back or confined.
   i) Keep the work area clear of all materials except those needed for your work. Extra books, purses, computer and other non-essentials should be kept away from working areas and equipment.
   j) Students are responsible for the proper disposal of used material if any in appropriate containers.
   k) If a piece of equipment fails while being used, report it immediately to your lab assistant or instructor. Never try to fix the problem yourself because you could harm yourself and others.
   l) If leaving a lab unattended, turn off all ignition sources and lock the doors. Clean up your work area before leaving.

4.4 Electrical Safety
   a) Obtain permission before operating electrical equipment.
   b) Maintain an unobstructed access to all electrical panels.
   c) Wiring or other electrical modifications have to be performed by a certified technician.
d) Avoid using extension cords whenever possible. If you must use one, obtain a heavy-duty one that is electrically grounded, and install it safely. Extension cords should not go under doors, across aisles, be hung from the ceiling, or plugged into other extension cords.

e) Never remove equipment covers.

f) When you are adjusting any high voltage equipment or a laser which is powered with a high voltage supply, USE ONLY ONE HAND. Your other hand is best placed in a pocket or behind your back. This procedure eliminates the possibility of an accident where high voltage current flows up one arm, through your chest, and down the other arm.

4.5 Mechanical Safety

a) When using compressed air, use only approved nozzles and never directs the air towards any person.

b) Guards on machinery must be in place all the time.

c) Exercise care when working with or near hydraulically- or pneumatically driven equipment; sudden or unexpected motion can inflict serious injury.

4.6 Chemical Safety

a) Treat every chemical as if it were hazardous.

b) Make sure all chemicals are clearly and currently labelled with the substance name, concentration and date.

c) Never return chemicals to reagent bottles (try for the correct amount and share any excess).

d) Use volatile and flammable compounds only in a fume hood. Procedures that require aerosols should be performed in a hood to prevent inhalation of hazardous material.

e) Never allow a solvent to come in contact with your skin, always use gloves, never "smell" a solvent. Read the label on every container to identify its contents.

f) Dispose of waste and broken glassware in proper containers.

h) Clean up spills immediately, and if necessary, ask for help for Instructors or lab staff.

h) Do not consume nor store food in laboratories.

4.7 Additional Safety Guidelines

a) Never do unauthorized experiments.

b) Keep your lab space clean and organized.

c) Do not leave an on-going experiment unattended.

d) Never taste anything. Never pipette by mouth; use a bulb.

e) Never use open flames in laboratory unless instructed to do so.

f) Check your glassware for cracks and chips each time you use it. Cracks could cause the glassware to fail during use and cause serious injury to you or lab mates.

g) Maintain unobstructed access to all exits, fire extinguishers, electrical panels, emergency showers, and eye washes.

h) Do not use corridors for storage or work areas.

i) Do not store heavy items above table height. Any overhead storage of supplies on top of cabinets should be limited to lightweight items only.

j) Be careful when lifting heavy objects; only shop staff may operate forklifts, elevators or cranes.

k) Clean your lab bench and equipment, and lock the door before you leave the laboratory.
5 Acknowledgment²

I, ________________, Student ID No ____________________, currently enrolled in course M2010, section 1, have read and understood all the sections of the laboratory objectives, policies and safety procedures, including the following:

1 Overall Objective
2 Specific Objectives
3 Laboratory Policies
4 Safety in the Laboratory
   4.1 Emergency Response
   4.2 Common Sense
   4.3 Personal and General Laboratory Safety
   4.4 Electrical Safety
   4.5 Mechanical Safety
   4.6 Chemical Safety
   4.7 Additional Safety Guidelines

I am responsible for following these procedures while in any institute laboratories.

________________________________________
Signature

________________________________________
Date

² Please sign and turn this page in during your first lab session.