

## Laboratory and Safety Procedures –G19 (Mechatronics)

### Revision History

Date	Rev	Description	Author	Comments
14 June 2008	0.1	Draft Doc	Adrian Keating	
17 June 2008	0.2	Update	A Keating	Dealing with Faulty equipment

### 1.0 Scope:

This document outlines the operational and safety procedures required within G19. This laboratory is a shared resource – all users (students, tutors, academics) are required to keep the lab clean and in good working order. All users must observe the safety procedures for the laboratory and execute duty-of-care when working in the Laboratory.

### 2.0 Procedures (rules):

#### **Cleaning:**

**Floors and benches must be left clean and all tools put away** by the end of the day (5pm). If you're working after 5pm, you're responsible for cleaning before leaving. This is required for the cleaners to do their job and for the next group to have clear access. If not done, the setup left out may be thrown away into the bin by the project supervisor.

Students can be asked to clean any area, at any time by the area supervisor.

Projects Teams (all students) will be assigned to a cleaning roster. Each week, the team on the roster must clean. Only 1 hour of cleaning is required by each student. A check list of items which need to be done is located in G19.

#### **Working in G19**

All users must return all tools to the tool boxes, all equipment to the shelves and all their experiments to a labeled draw at the end of your laboratory use for the day. This included all hand tools. Do not store any tools in your designed draws unless you own them. Your tools must be clearly labeled.

No hammering, drilling, sawing or other machining is to be performed on lab benches. The Black&Decker work-horse in G19 is to be used for all these tasks. Respect the tools in the Lab. For example:

Don't use a screw driver or soldering iron as a chisel or lever

Don't use scissors as a wire cutter

All work, projects, experiments, setups or bits and pieces on benches in the laboratory are to be labeled with the following info.

**Students/ Group name:**

**Contact number:**

**Experiment name:**

**In use until date:**

**Current date:**

**Safety issue to note:**

Labels are provided in the lab. Failure to provide this information or label your experiment may result in any parts left out on the benches being thrown out. This will be enforced.

Note that labeling a bench does not mean it will not be removed. If you claim a space for too long, or if you claim common lab items as “not to be touched”, your experiment will be removed. The rule is, be respectful of all users. Long term experiments should be put away. Do not use common items (such as a laboratory drill) in your project.

When running experiments that are loud or disruptive student should:

- 1) best keep these for after hours
- 2) post warning signs up at least 24 hours in advance warning all users of the nature of the disturbance and it's intended duration.
- 3) Use appropriate personal protective safety equipment

Students are to show other uses of the lab utmost respect at all times.

Other users should be informed of any issue which affects them.

Student should not use **common lab equipment or facilities** for extended periods of time. Equipment usage is to be scheduled when multiple users require a common tool. Notes are to be left for any user when you need to “borrow” a tool which is otherwise in use by that person. If you need something long term either 1) request long term use from the Laboratory Manager or 2) have your supervisor buy what you need. Consumables in the mechatronics cabinets (motors, electronics etc..) may be used in your projects.

Unlocked draws will be provided for project teams to store their project during the semester. All draws must be clearly labeled with : Do not store your personnel belongings, tools or equipment in the Laboratory without the permission of the Laboratory Manager. Any items related to your project must be placed in your marked storage draws.

No food or drink to be consumed at any time in the laboratory

To use the soldering irons you must 1) review basic soldering techniques, 2) tin the soldering iron tip, 3) ensure the sponge is wet, 4) keep the temperature to less than 320°C.

All equipment must be signed out in the loan book when taken from G19, this included books. However books are for overnight loan only.

Students are not permitted to work in the laboratory after hours unless at least 2 students are present in G19 at all times during this work.

All **damaged or non-functioning** equipment is to be fixed or:

- 1) Labelled as faulty (with the fault if known)
- 2) Reported to the laboratory supervisor

“Non-functioning” includes multimeters needing new batteries. Do not put back in the draw as this will delay others.

## **Computers**

**Computers** are for use for student project work such as interfacing to projects, writing code, analyzing data or connecting to the intra/internet for project related materials. Work or assignments are not to be completed on these computers. **Microsoft office is NOT installed on these PC in the Laboratory.** Do not ask for office (Word) to be installed.

Computers are not to be used for any word processing or “assignment” work unless indicated on the machine. Computers are not to be used for general web surfing or downloading. **PCs are never to be password screen-locked.** Where student demand for PCs is high, students are requested to schedule with other students when free time will be made available. As a guide, it is suggested that a single block of usage time be kept to **less than 2 hours** during high periods of demand. No offensive material is to be downloaded, uploaded or placed on any machines in these (or any UWA) computer facilities.

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## **3.0 Safety**

UWA and Lab safety documents are in a folder attached to the entrance door. Students must read and understand these rules before working in the laboratory or before a key will be assigned to this Laboratory. All relevant safety equipment is located in the SAFETY-CORNER.

Students must be able to demonstrate at any time how the setup they have assembled complies with UWA safety regulations. This includes but is not limited to:

- Environmental controls – use of interlocks and safety switches
- Personal protection – Adequate access and use of goggles, gloves, etc..
- Administrative controls – Documentation for the use of the system ( or the tools, chemicals within the system).

**Student must know the Emergency number at all times:**

**2222**

No open toe shoes permitted in the laboratory at any time.

You are required to keep a pair of safety glasses with you at all times when in G19 (located in the safety-corner)

No equipment is to be built or modified which connects to the mains (240V). All main connected equipment is to be modified by qualified electrical contractors only.

Finger pinch hazards are to be avoided on all moving, rotating or electric machinery.

Compressed Air fittings and hoses are to be installed by qualified workshop technicians or other personnel. Hose bursts and fitting failures are a potential source of danger, particularly to the eye.

No compressed gas cylinders are permitted in the laboratory unless suitable restraints are provided.

No operation of rotating equipment is permitted without appropriate training and documentation. You must be able to show evidence of having been trained for equipment at any time. Specific training required for drills, jigsaws, routers and grinders.

Avoid burns from hot soldering iron

The water in taps not drinkable, drinking water is outside

No food to be consumed or prepared in the laboratory

Students are not permitted to work in the laboratory after hours unless at least 2 students are present in G19 at all times during this work.

Note the location and type of all fire extinguishers in G19. During an emergency, exit the lab immediately and meet in the assembly point in car park.

Note the location of the first aid kit in G19.

Visitors to the laboratory should stay behind the marked safety tape near the door. At all other times they are to be escorted within the lab and they are not permitted to touch anything.

All incidents, accidents or near misses are to be reported in the "incidents" forms located in the safety folder behind the door in G19.

**MSDS** (Material Safety Data Sheets) for common chemicals are also stored in the safety document on the door. **No toxic or dangerous chemicals or substances** are allowed

into the laboratory without the written permission of the area manager. Students are to supply a copy of the Material Safety Datasheet (MSDS) to apply to the area manager for such permission. Failure to comply with this rule will result in the shut down of the entire laboratory and the student(s) held accountable. Subsequently the MSDS must be placed in the the Safety folder.

No bags are permitted in the lab. They clutter the area and are a **tripping hazard**. Leave bags near the door, in the space provided. Do not leave them on the floor in the lab.

#### **4.0 Penalties**

Violation of these laboratory or safety procedures will results in one or more of the following:

- Privileges (lab, equipment, school access) revoked for a period of 1 week
- Privileges (lab, equipment, school access) revoked for a period of 3 week
- Privileges (lab, equipment, school access) revoked for full semester
- Sent to see head-of-school
- Sent to see facility-sub dean

In instances of privileges being revoked, you will be asked for you key access to G19 on-the-spot.

If the loss of privileges results in poor performance, no consideration will be given.