



**FREDERICK UNIVERSITY**

**ME112** – Introduction to Mechanical Engineering with Workshop

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# Workshop 1

## Module 1: Basic Workshop Safety

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PREPARED BY

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# Module 1: Basic workshop safety

## Module Objectives

After the completion of this module, the student should be able to:

1. Recognize the importance of dress safely at the workshop.
2. Explain the importance of behaving safely at the workshop.
3. Recognize the importance of keeping the workshop clean and tidy.
4. Demonstrate an awareness of the workshop safety rules and regulations written in the safety contract.

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### **1.1. Introduction to workshop safety**

A workshop is a place where you learn how to use tools and machines to make things; it can be a dangerous place, so you should learn the safety rules and regulations for the workshop.

The safety rules tell you how to dress appropriately and how to behave whilst working with tools that may cause harm.

You must never play in the workshop, run around or throw equipment to one another.

### **1.2. Personal safety:**

The basic dress rules that you should always follow are:

#### **1.2.1 Proper clothing**

You should not wear loose clothes that can be caught easily in the moving machinery. You have to wear tight fitting overalls as shown in Fig.1.1



**Fig. 1.1:** Correct dress in the workshop.

#### **1.2.2 Proper eye protection**

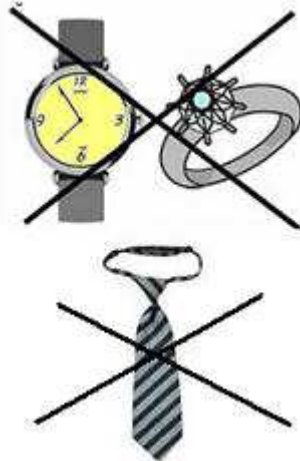
You must always wear goggles to protect your eyes while you are working in the workshop. A safety goggle is shown in Fig.1.2



**Fig. 1.2:** Safety goggle

### 1.2.3 Remove tie and jewellery

Ties, watches, rings and other jewellery increase the chance of getting caught by moving machinery. You should remove them before entering the workshop. See Fig. 1.3.



**Fig. 1.3:** No watches, jewellery and necktie inside the workplace.

### 1.2.4 Secure long hair

Long hair is considered to be an unsafe factor as it may be caught by the rotating parts of the machine.

### 1.2.5 Safety shoes

You must not wear sandals or soft shoe inside the workshop as they will not protect your feet from falling heavy objects. A pair of safety shoes (steel-toe shoes) will protect your feet if you accidentally drop something. A safety shoe is shown in Fig.1.4. The way you dress in the workshop is very important for your safety, always be sure to dress properly and encourage your friends to do the same.



**Fig. 1.4:** Shows a safety shoe

### 1.3. Use of tools

You will learn how to use many tools and machines in the workshop. Always seek for your instructor's advice before using a machine for the first time.

You should follow your lecturer's instructions about the safe use of the workshop tools. Fig.1.7 shows some tools that are used in the workshop.



**Hacksaw**



**Hand File**



**Vernier caliper**



**Hammer**



**Drilling machine**



**Bench grinder**

**Fig 1.7:** Shows some tools that are used in the mechanical workshop

#### 1.4. Workshop cleanliness

It is very important to keep the workshop clean and tidy. This will assist in saving time and prevent accidents. When you have finished using tools, they must be put away and kept in the proper place as shown in Fig.1.7. a

**Do not leave tools lying around the benches or workshop.  
Make sure also that all unwanted tools are kept away in order to avoid any possible accidents.**







**Fig 1.7.a**

### 1.5 Fire precautions

Fire is a great danger in a workshop and extra care should be taken to avoid the fire. The main causes of fire are:







- Bad storage of flammable materials;
- Bad and careless electrical maintenance;
- Smoking and throwing away cigarettes.

#### 1.5.1 Classification of fire classes according to the US system

Class of Extinguisher	Class Symbols	Materials to Use On
<b>Class A</b>		Ordinary Combustibles: paper, wood, cloth, rubber, many plastic.
<b>Class B</b>		Flammable Liquids: oil, grease, petrol, some paints, solvents, etc.
<b>Class C</b>		Electrical: wiring, DB boards.  Electrical equipment.
<b>Class D</b>		Combustible Metals: magnesium, sodium.

**1.5.2 Fire extinguisher colour coding pre 1997.**

The colour of the fire extinguisher indicates its type as follows

Serial	Color	Shape	Type
1	Red		Water
2	Blue		Dry Powder
3	Cream		Foam
4	Black		Carbone Dioxide (CO2)
5	Green		Vaporizing Liquid
6	Yellow		Wet Chemicals



### **1.6. Safety contract**

1. You should read, understand and sign the safety contract on the next page.
2. The safety contract states that safety is your responsibility. The safety contract must be signed before you carry out any work in the workshop. If you fail to observe and obey the safety rules, you will not be allowed to use the workshop and the case will be reported to Frederick University committee for a proper action.



## **SAFETY CONTRACT**

### **I RECOGNIZE THAT:**

1. Safety is my responsibility when using the workshop tools.
2. Safety regulations have been provided to me.
3. The possibility of accident and injury increases if I do not follow all the safety guidelines.
4. I should act responsibly to ensure my own safety AND the safety of others in the work area.

### **I AGREE TO:**

1. Never work in the shop without my instructor's supervision.
2. Read and practice all the safety regulations that have been distributed to me in this course or have been posted in the work areas.
3. Act in a responsible manner at all times in the workshop.
4. Follow all instructions given by the instructor.
5. Immediately report any unsafe condition or activity to my instructor.
6. Wear eye protection at all times when working with tools or working anywhere near someone who is using tools.
7. Secure long hair, remove jewellery, secure loosed clothing, and wear safety shoes in the Workshop.
8. Clean all work areas and put equipment away before leaving the workshop.

**I have read and agreed with all the safety instructions.**

<b>Student Name</b>		<b>Signature</b>	
<b>Date</b>		<b>Reg. No.</b>	