



Lab. 1

Lab. Safety & Introduction

140 MIC
Practical





Evaluation Grades and Important Dates

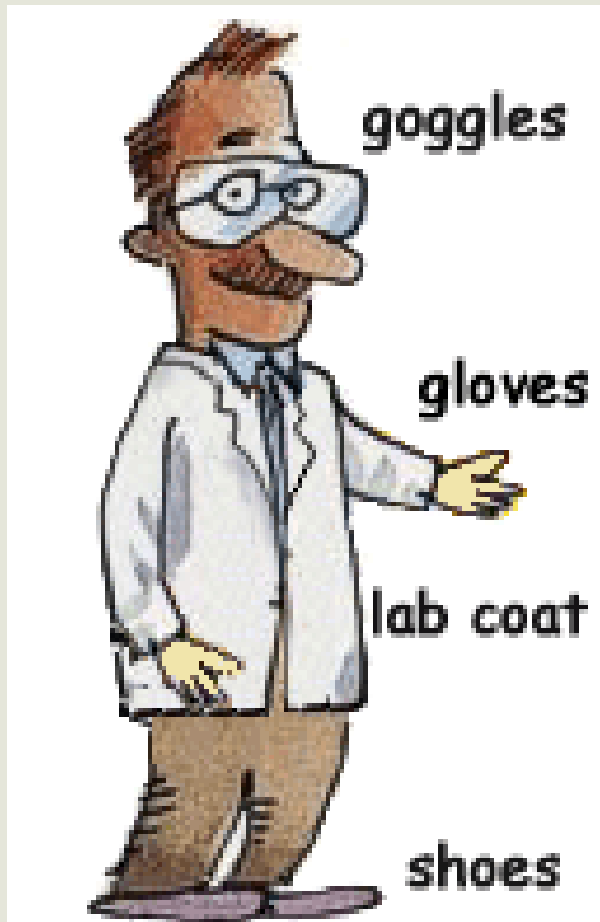
Grades

- Oral quiz: 1 Mark
- Quiz: 4 Marks
- Lab. Activity: 5 Marks
- Reports: 5 Marks
- Final: 15 Marks

Important Dates

- Oral quiz: Weekly.
- Quiz: 17-06-1439 AH.
- Lab. Activity: Weekly
- Reports: Weekly*
- 23-07-1439 AH.
 - L 68-69 (8-10 am)

The way a microbiologist look !





Clean, clean and clean !

- Clean your equipment and area before leaving lab or you will be marked down.
- Do the staining steps near the sink then open the water until the whole stain is removed.
- Never throw used matches, tissues, or cotton inside the sink!
- Washing hands.
- Disinfect the bench top with (alcohol 70% or Dettol 50%) before and after each lab.





Laboratory safety common hazard symbols:

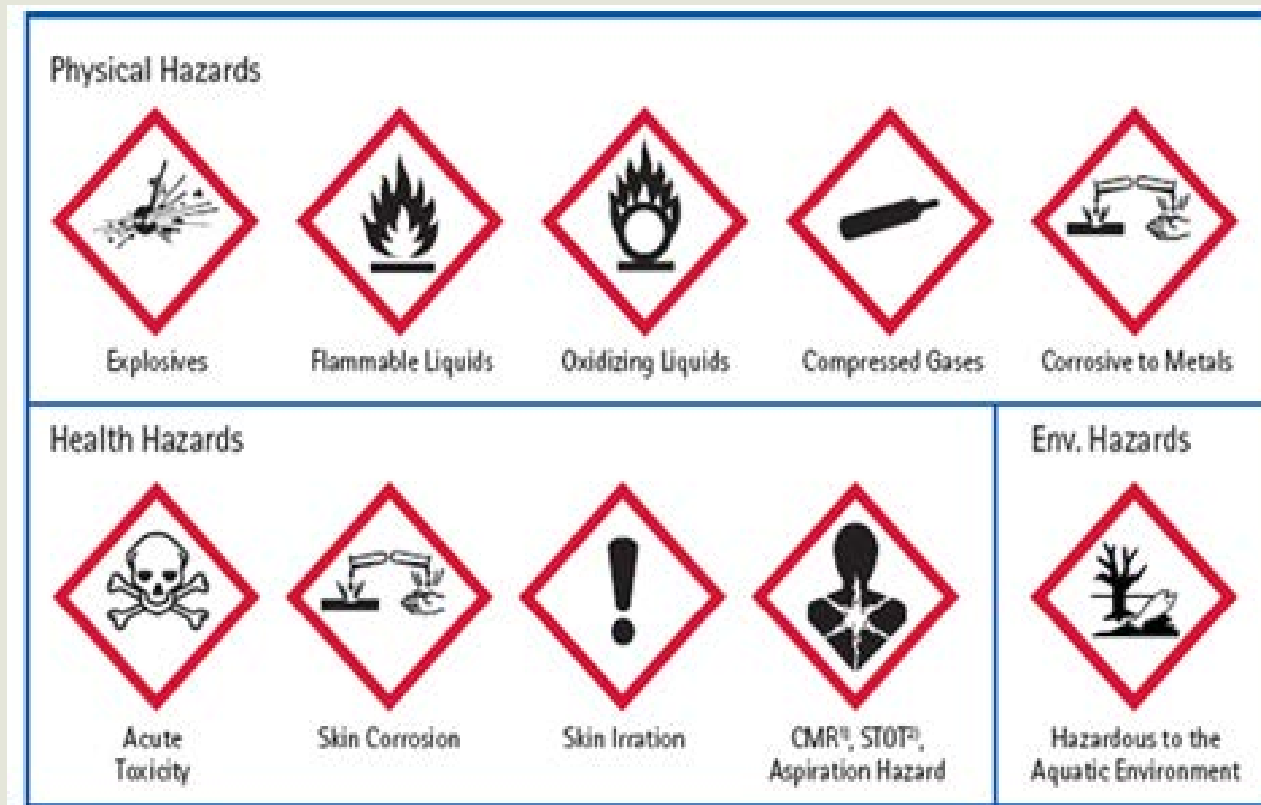
Old hazard symbols:

| | | | | |
|---|--|--|--|--|
|  |  |  |  |  |
| Explosive | Oxidising | Extremely flammable | Corrosive | Dangerous for the environment |
| H19A-S | H22A-S | H20A-S | H18A-S | H21A-S |
|  |  |  |  |  |
| Harmful | Highly flammable | Toxic | Irritant | Very toxic |
| H15A-S | H13A-S | H16A-S | H14A-S | H17A-S |



Laboratory safety common hazard symbols (cont`)

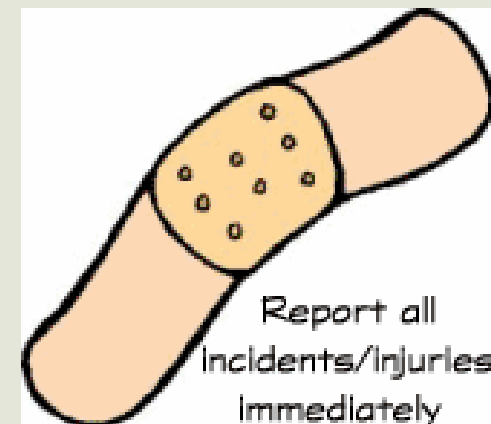
New hazard symbols:



First aid

Chemical burns rinsed with water

- Immediately rinse with a large amount of cool water.
- Flush the area for at least 20 minutes.
- Do not use a hard spray of water.
- Remove the chemical substance.
- Take off any clothing or jewellery that has the chemical on it.
- If the area still has a burning sensation after 20 minutes, flush the area again with flowing water for 10 to 15 minutes.





Microbiology

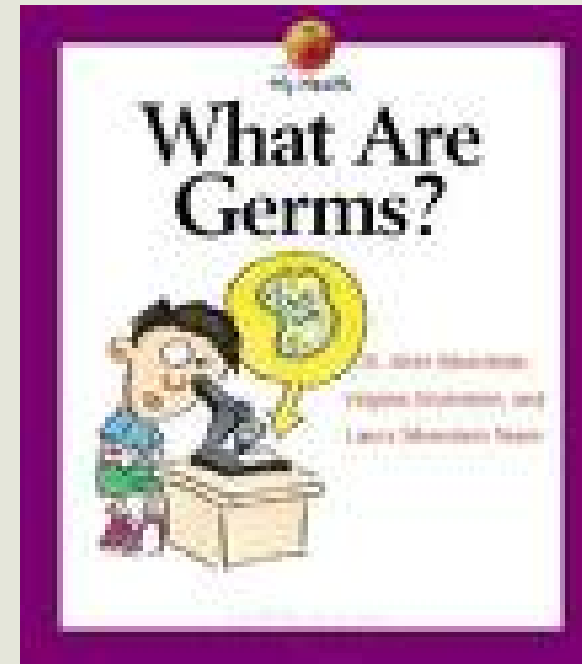
- **Micro** - too small to be seen with the naked eye
- **Bio** - life
- **logy** - study of

(The science that studies micro-organisms)



Organisms included in the study of Microbiology

- Bacteria
- Algae
- Fungi
- Viruses
- Protozoa



Microorganisms - Microbes - Germs



The Compound Microscope

▪A device for magnifying objects that are too small to be seen with the naked eye.

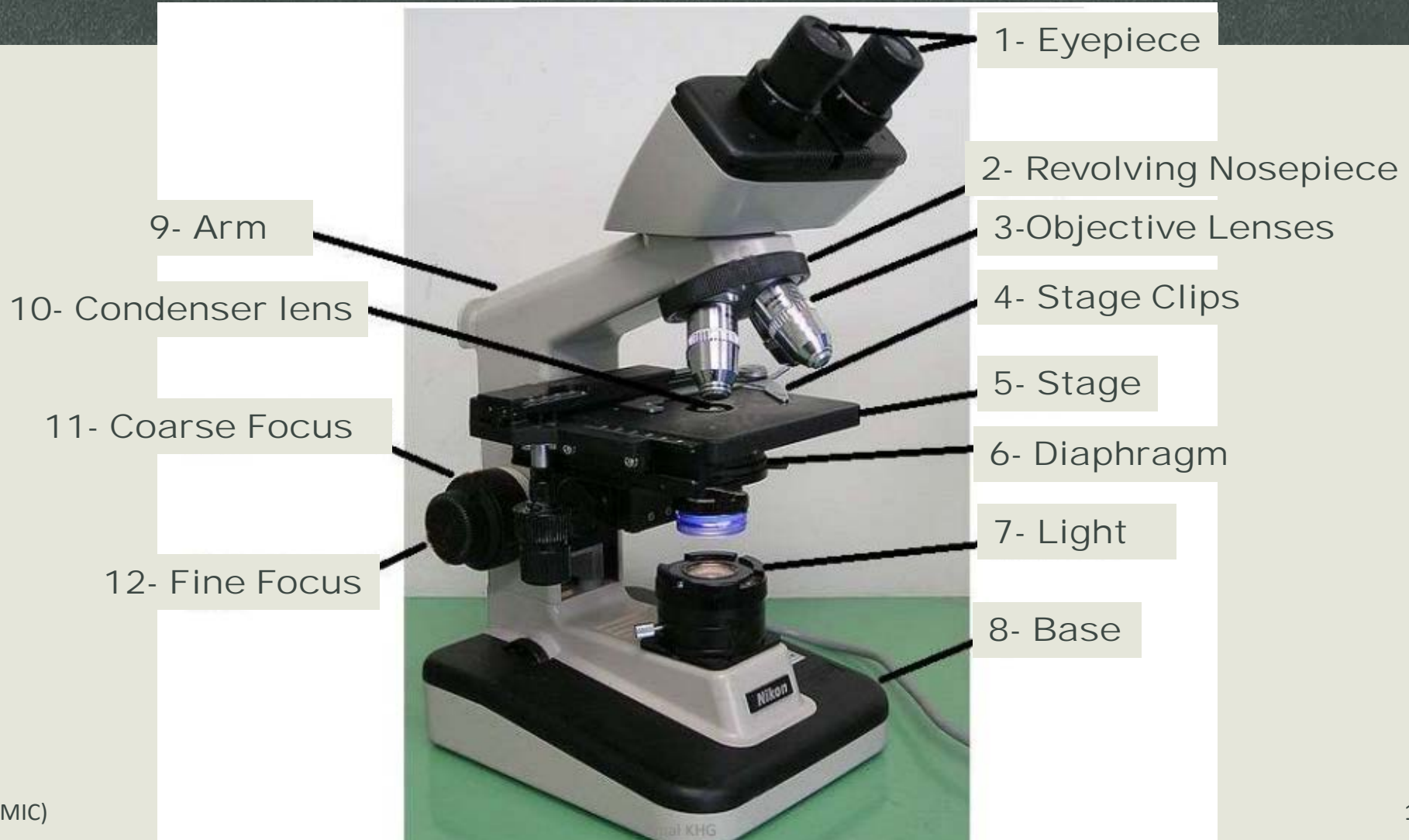
Used to observe very small organisms.

Objectives:

- Utilize all powers of magnification on the compound microscope.
- Identify all the parts of a compound microscope.
- Know the rules for proper microscope care



Parts of a Compound Microscope Labeled Diagram and Functions





Parts of a Compound Microscope

Labeled Diagram and Functions

- **Eyepiece (Ocular)** : The lens the viewer looks through to see the specimen.
- **Nosepiece**: Holds objectives.
- **Objective lenses**: One of the most important parts of a compound microscope, as they are the lenses closest to the specimen.
- **Body tube (Head)**: The body tube connects the eyepiece to the objective.
- **Stage clips**: Metal clips that hold the slide in place..
- **Stage**: The flat platform where the slide is placed.
- **Diaphragm**: Adjusts the amount of light that reaches the specimen.



Parts of a Compound Microscope

Labeled Diagram and Functions (Cont`)

- **Light source(illuminator):** The light source for a microscope.
- **Base:** The base supports the microscope and it's where illuminator is located
- **Condenser lens:** Gathers and focuses light from the illuminator onto the specimen being viewed.
- **Coarse adjustment knob:** Brings the specimen into general focus.
- **Fine adjustment knob:** Fine tunes the focus and increases the detail of the specimen.
- **Stage height adjustment (Stage Control):** These knobs move the stage left and right.



Calculation of magnification

Total magnification =

(Objective magnification) x (Ocular magnification; which is typically 10x).

i.e. (4X objective) x (10X ocular) = 40X total magnification.

Immersion oil, which has the ability to bend light equivalent to that of glass, allows more light to be gathered and allows a greater amount of resolution.

If the stage is a great distance away from the objective when the higher powers are used, the microscope has been adjusted incorrectly.



Examining the specimen

Microscopic Field - this is the area one can observe while looking through the oculars. As the magnification increases this will also decrease. When you look through the ocular you will see a lighted circle. This is known as the field of view or the field.

- **Parfocality** - this refers to the ability of a microscope to need only minor focusing adjustments after the specimen is found and focused using the lowest power.

A microscopist should use the **coarse adjustment knob** only when originally finding and focusing the specimen.

Once the original focus is made, the only adjustment should be with the **fine adjustment knob** as the magnification is increased.



With a binocular microscope,
adjust oculars for both eyes!



Don't shut one eye while
observing under the microscope!





Using the Microscope

1. The scope should be on the lowest power with the stage raised as high as it will go.
2. The slide should be placed between the stage clips and all placement of slide and stage objectives should be done BEFORE looking into the oculars.
3. Once all placement is ready, adjustment should be done while looking through the ocular.
4. Adjustment should begin with the coarse adjustment.
5. once the specimen is spotted then the fine tuning adjustment can be used.



Amal Alghamdi

Ahamdan1@ksu.edu.sa