Microscope Rules

Beginning of Lab

1. Carry all microscopes in an upright position with *both hands*. Pick up microscopes when moving them about the lab benches. Otherwise, they could "washboard" along the bench surface which causes improper lens alignment.

2. All optical (glass) components of the microscopes, including oculars and objectives, are to be cleaned *only* using lens paper and lens cleaner. *Never use Kimwipes **or** paper towels as they could scratch.* Do not touch optical glass with your fingers.

3. Always proceed from lower to higher power objectives:
    a. Check that the 4x objective is in position over the slide.
    b. Bring a slide into focus using the "coarse focus" followed by "fine focus" knobs.
    c. Bring the 10x objective into position and focus *only using the "fine focus" knob.*
    d. Bring the 40x objective into position and focus *only using the "fine focus" knob.*
    Remember: The 4x objective is the *only* time you will use the "coarse focus" knob.

4. Always adjust the condenser for optimal contrast for each objective. When finished, visually determine the direction required to turn the objective nosepiece back from higher to lower power (40x to 4x). *Always return the microscope for storage with the nosepiece in the 4x position!*
(Note: For the CX21, the condenser goes to the marked 4x, 10x, and 40x position respectively.)

5. *Never* use the 100x objective without using immersion oil. When you have correctly brought your slide into focus up to 40x (step 3), then:
    a. Turn the nosepiece half-way between the 40x and 100x objectives.
    b. Add 1 drop of immersion oil.
    c. Continue turning the nosepiece to the 100x objective and bring your slide into focus using the "fine focus" knob.
    d. *Never* turn your nosepiece back to the 40x objective when using oil or you will get oil all over that objective. Immersion oil *should never be put on any other objective than the 100x!* If this happens, immediately inform your instructor.
    e. Before you return any slides or your microscope after using immersion oil, make sure you have cleaned the objectives and slides with lens paper and lens cleaner followed by a fresh piece of lens paper.
(Note: If you are not in the microbiology class, chances are that you will never have to use this objective. Also, your instructor has permission to dock points from your grade if you are discovered to have put back a dirty scope and/or slides.)

6. You are responsible for the proper functioning of your assigned microscope. Inspect your microscope and determine that it is clean and properly functioning at the beginning of your lab. If you notice any damage or defects (cloudy/distorted/grainy image) with your scope:
    a. Immediately inform your instructor.
    b. Leave a note or message for the lab manager
(Note: Students who return damaged and/or oily/dirty microscopes to the cabinet may be assigned an "old dinosaur" microscope at the beginning of their next lab session for the duration of the course at the instructor's discretion.)

Microscope Rules

End of Lab

7. At the end of lab:
    a. completely lower the stage
    b. turn the nosepiece to the 4x position
    c. clean oculars and objective with lens paper and lens cleaner as needed (see the next section)
    d. turn the light to the lowest position or "off"
    e. correctly wrap the cord (*Do not* lower the stage onto the cord as this can cut the cord's casing and present and electric shock hazard!)
    f. put the dust cover over the scope
    g. *Return your microscope to its correctly numbered spot on the shelf in the cabinet!*

How to Clean the Microscope

NOTE: NEVER USE DRY LENS TISSUE OR DRY SWABS ON A DRY OCULAR OR OBJECTIVE: IT WILL SCRATCH THE LENS. NEVER USE BIBULOUS PAPER, KIMWIPES, PAPER TOWELS, OR FACIAL TISSUE ON AN OCULAR OR OBJECTIVE: THEY WILL SCRATCH THE LENS.

Cleaning Objectives and Oculars:

1. Gently use canned air to blow away coarse dirt particles. *Never* dust a lens by blowing with your mouth: saliva could deposit and damage the lens.
2. Apply a small amount of lens cleaner (70% isopropyl alcohol) to one end of a piece of lens paper or clean swab. Holding the dry end, gently drag the moist end of the lens paper or swab across the front of the objective/ocular several times using a fresh section of moist lens paper each time. *Never* use your fingertip to directly push the lens paper against the objective/ocular. *Never* rub a lens' surface with a high degree of pressure: it will scratch.
3. Using one end of a new, dry piece of lens paper, gently blot excess lens cleaner from the objective/ocular by several times lifting a fresh section of the dry lens paper to touch the end of the objective/ocular. *Never* use your fingertip to directly push the lens paper against the objective/ocular. *Never* rub a lens' surface with a high degree of pressure: it will scratch.
4. If objective/ocular is still not clean, repeat steps (2) and (3).