

Ministry of Higher Education and Scientific

Research University of Baghdad

College of Science Department of

Biology



# Practical Bacteriology

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المرحلة الأولى / الدراسات الصباحية والمسائية  
الفصل الدراسي الثاني

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## Lab. 1 An introduction to microbiology, aseptic technique and safety

- The teaching of such an important subject as microbiology cannot be achieved effectively without enhancing the theory with 'hands on' experience in the laboratory.
- The purpose of this laboratory is to provide you with good techniques in practical microbiology to ensure that investigations proceed safely and achieve the required educational aims successfully.

### General Lab Safety

- There are many potential hazards when working with microorganisms. Potential safety hazards can be avoided with the appropriate precautions.
- When working with microbiological agents you will need to be aware of standard laboratory safety procedures, protective wear, and chemical safety.
- Safety in the lab is everyone's responsibility.
- Before starting any experiment, you should understand the entire procedure that you will be following. You need to make sure that you have the proper equipment, and that you know how to use it.

### Microbiology Lab Practices and Safety Rules

1. Wear a lab coat in the lab and do not wear it to other non-lab areas.
2. Wash your hands. Use a disinfectant soap to wash your hands before and after working with microorganisms.
3. Absolutely no food, drinks, chewing gum, or smoking is allowed in

**the laboratory.** Do not store food in areas where microorganisms are stored. Do not put anything in your mouth such as pencils, pens, labels, or fingers.

4. Cover any cuts on your hands with a bandage. Gloves may be worn as extra protection.
5. Avoid loose fitting items of clothing. Wear appropriate shoes (sandals are not allowed) in the laboratory.
6. Keep your workspace free of all unnecessary materials. Backpacks, purses, and coats should be placed in the cubbyholes by the front door of the lab. Place needed items on the floor near your feet, but not in the aisle.
7. Disinfect work areas before and after use. Laboratory equipment and work surfaces should be decontaminated with an appropriate disinfectant, such as 10% bleach or 70% ethanol solution.
8. Label everything clearly. All cultures, chemicals, disinfectants, and media should be clearly and securely labeled with their names and dates.
9. Do not open Petri dishes in the lab unless absolutely necessary.
10. Inoculating loops and needles should be flame sterilized in a Bunsen burner before you lay them down.
11. Turn off Bunsen burners when not in use. Long hair must be restrained if Bunsen burners are in use.

12. When you flame sterilize with alcohol, be sure that you do not have any papers under you.
13. Treat all microorganisms (especially unknown cultures) as potential pathogens. Use appropriate care and do not take cultures out of the laboratory.
14. Wear disposable gloves when working with potentially infectious microbes or samples.
15. Sterilize equipment and materials. All materials, media, tubes, plates, loops, needles, pipettes, and other items used for culturing microorganisms should be sterilized.
16. Never pipette by mouth. Use pipette bulbs or pipetting devices for the aspiration and dispensing of liquid cultures.
17. Consider everything a biohazard. **Do not pour anything down the sink.** Autoclave liquids and broth cultures to sterilize them before discarding.
18. Autoclave or disinfect all waste material. All items to be discarded after a class, such as culture tubes, culture plates, swabs, toothpicks, wipes, disposable transfer needles, and gloves, should be placed in a biohazard autoclave bag and autoclaved **30 to 40 minutes at 121° C at 20 pounds of pressure.** If no autoclave is available and you are not working with pathogens, the materials can be covered with a **10% bleach solution and allowed to soak for at least 1 to 2 hours.**
19. Familiarize yourself with the location of safety equipment in the lab (e.g., sinks, fire extinguisher, and first aid kit).
20. Dispose of broken glass in the broken glass container.
21. Dispose of razor blades, syringe needles, and sharp metal objects in the "sharps" container.
22. Report all injuries or accidents immediately to the instructor, no matter how small they seem.

23. Report spills and accidents immediately to your instructor. Clean small spills with care. Seek help for large spills.



