

A grayscale background image of various laboratory glassware, including a round-bottom flask, two Erlenmeyer flasks, a graduated cylinder, and a beaker, all containing liquids. The glassware is arranged on a surface, and the background is slightly blurred.

LEC1\ GENERAL LABORATORY FEATURES

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INTRODUCTION

- **Definition of a laboratory**
- A laboratory is a controlled environment equipped with instruments, tools, and materials where scientific experiments, research, analysis, or training are conducted• Purpose of laboratories in education, research, and diagnostics
- Importance in scientific progress

PURPOSE OF LABORATORIES IN EDUCATION, RESEARCH, AND DIAGNOSTICS

- Education: Provide hands-on learning, develop practical skills, and support theoretical knowledge.
- Research: Enable scientific investigation, innovation, and discovery of new knowledge.
- Diagnostics: Support accurate testing, analysis, and identification of medical and scientific problems

LOCATION & DESIGN

- • Location away from noise and pollution.
- • Large building with wide corridors.
- • Good ventilation and lighting.



BASIC FACILITIES

- • Workbenches resistant to chemicals
- • Cabinets and shelves for storage
- • Water, gas, and electricity supply
- • Fume hoods



TOOLS & EQUIPMENT

- Microscopes, sensitive balances, centrifuges
- Glassware and consumables
- Analytical and biological instruments



SAFETY FEATURES

- • Fire extinguishers and alarm systems
- • First aid kit
- • Emergency shower and eye wash
- • Safety signs and guidelines



HYGIENE & CLEANLINESS

- Safe disposal of chemical and biological waste
- Cleaning and sterilization of tools
- Prohibition of eating and drinking



PERSONNEL

- • Lab Supervisor
- • Technicians
- • Students and researchers

CONCLUSION

- •A laboratory is an integrated system (location - facilities - equipment - safety - personnel)
- •Following design and safety standards ensures effective and safe work environment

REFERENCES

- •Laboratory Management & Design textbooks
- •WHO & CDC Guidelines