



PHARMACOLEARN

It's Important to Know!

BP206T — Environmental Sciences

B.Pharm Semester 2 · Unit 2 — Ecosystems

Unit II: Ecosystems

An ecosystem contains living organisms and the physical environment interacting as a system. Producers capture energy, consumers obtain energy by feeding and decomposers return nutrients to the environment.

Structure and function

Abiotic factors include light, temperature, water, soil, minerals and atmospheric gases. Biotic components include producers, consumers and decomposers. Food chains show one route of energy transfer, while food webs show interconnected feeding relationships.

Energy flows through an ecosystem and is lost as heat at each transfer. Nutrients cycle through air, water, soil and organisms. Ecological pyramids may represent number, biomass or energy.

Forest, grassland and desert ecosystems

Forest ecosystems contain layered vegetation, diverse habitats and complex nutrient cycling. Grasslands are dominated by grasses and support grazing food webs. Desert ecosystems have low rainfall, strong temperature variation and organisms adapted to conserve water.

Aquatic ecosystems

Ponds and lakes are standing-water systems. Streams and rivers are flowing-water systems. Oceans cover large saline regions, while estuaries are transition zones where fresh and marine waters mix. Aquatic systems differ in light penetration, oxygen, salinity, flow and nutrient availability.

Unit II: Frequently asked questions

Q: What are the main components of an ecosystem?

A: The main components are abiotic factors and biotic organisms, including producers, consumers and decomposers.

Q: How does energy move through an ecosystem?

A: Energy enters mainly through producers, passes through feeding relationships and is progressively lost as heat.

Q: What is an estuary?

A: It is a transition zone where freshwater and marine water mix, creating changing salinity and nutrient conditions.

Unit II: Key takeaways

- Ecosystems combine living organisms with physical surroundings.
- Producers, consumers and decomposers support energy flow and nutrient cycling.
- Energy decreases at successive trophic levels.
- Forest, grassland and desert ecosystems differ in climate and adaptations.
- Aquatic systems differ in flow, salinity, light, oxygen and nutrients.

Unit II: Practical correlation

Practical correlation: wastewater discharge. A laboratory discharge can alter oxygen demand, nutrient levels or toxicity in an aquatic ecosystem. Preventing discharge is preferable to relying only on dilution.