

**University of Basrah  
College of Science  
Dept. of Ecology**

**Fundamentals of Ecology  
E 102**

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## What is ecology?

Ecology is the **scientific study** of the processes regulating the **distribution and abundance of organisms** and the **interactions** among them, and the study of how these organisms in turn mediate the **transport and transformation of energy and matter** in the biosphere.

Or

Ecology is the **scientific study** of the **interactions of living organisms and their environments** including **living organisms and nonliving components**. We have to study these interactions to discover the principles that govern them.

## Divisions of ecology

**Ecology** is a broad biological science and can be divided into many subdivisions using various criteria. Many of these fields overlap each other, and few of them exist in isolation. Examples of the divisions of ecology are:

[population ecology](#)

[behavioral ecology](#)

[community ecology](#)

[molecular ecology](#)

[quantitative ecology](#)

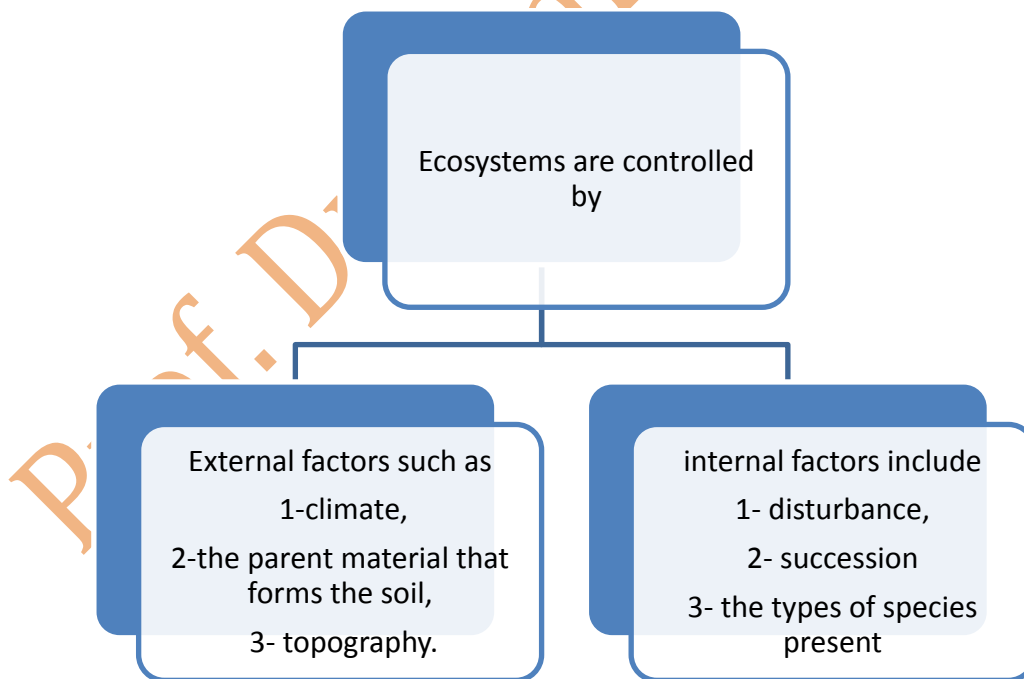
## Ecosystem

**An ecosystem can be defined as more-or-less self-contained ecological entity, consisting of both organisms and their complete biotic (living) and abiotic (non-living) environment found in a particular place at a particular time.**

Ecosystems are controlled by both external and internal factors.

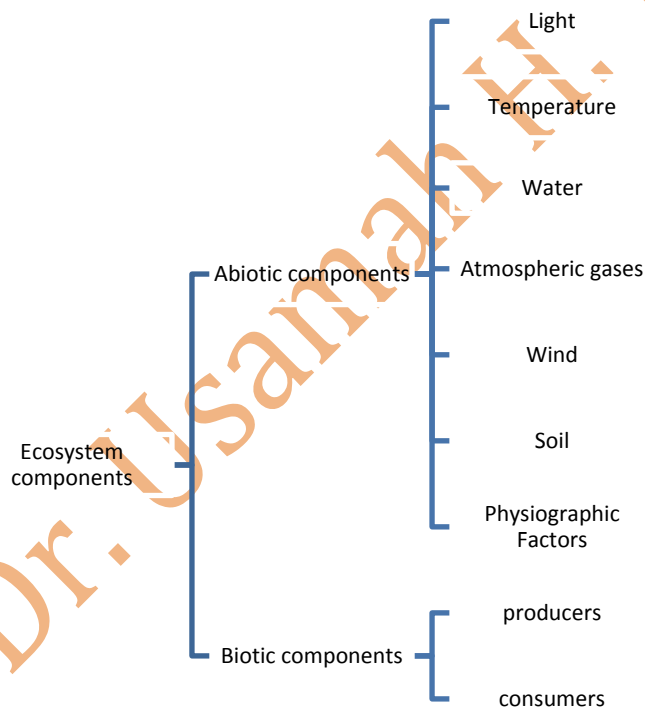
External factors such as climate, the parent material that forms the soil, and topography.

Other internal factors include disturbance, succession and the types of species present.



## Ecosystem components:

Two main components exist in an ecosystem are the abiotic and biotic. The **abiotic components** of any ecosystem are the **properties** of the environment; the **biotic components** are the life forms that occupy a given ecosystem.



## **Abiotic Components**

Abiotic components of an ecosystem consist of the nonorganic aspects of the environment. The way in which plants and animals grow and carry out their different activities is a result of several abiotic factors. These

factors are light, temperature, water, atmospheric gases, wind as well as soil (**edaphic**) and physiographic (nature of land surface) factors.

[Light](#) | [Temperature](#) | [Water](#) | [Atmospheric gases](#) | [Wind](#) | [Soil](#) | [Physiographic Factors](#)

## **Biotic Components**

The **biotic components** of the ecosystem can be categorized as either **producers** or **consumers**.

[Producers](#) are **autotrophic** organisms with the capability of carrying out photosynthesis and making food themselves, and indirectly for other organisms as well.

**Consumers** are **heterotrophic organisms** that use food that has already been performed by other organisms. It is possible to distinguish four types of consumers, depending on their **food source**.

