

## CLASS 11 BIOLOGY NOTES

BY SUNIL DUTT BHARDWAJ, SARVODAYA CO-ED VIDYALAYA, MMTTC, BEGUMPUR, NEW DELHI

### LIVING WORLD

The branch of biology dealing with identification, nomenclature and classification of organisms is referred to as **Taxonomy**.

Characteristics features of Living things / Differences between living and non-living things:

- a) Growth
- b) Reproduction
- c) Metabolism
- d) Response to stimuli

**Biodiversity:** Biodiversity is the occurrence of variety of life forms differing in morphology, size, colour, anatomy, habitats and habits. Each different kind of plant, animal or microorganisms represents a species. Range of organisms present on earth (1.7 – 1.8 million)

**Identification:** Identification is the finding of correct name and place of an organism in a system of classification. It is done with the help of keys. This is carried out by determining similarity with already known organisms or Comparing similarities and differences with already known ones.

**Nomenclature:** Naming of organisms. The names are unique and universal. Nomenclature is the process of standardize naming of living organism such that a particular organism is known by the same name all over the world.

Rules for nomenclature are provided by;

- a) **ICBN** – International Code of Botanical Nomenclature
- b) **ICZN** – International Code of Zoological Nomenclature

**Binomial Nomenclature: Carolus Linnaeus** (Father of Taxonomy )-Name with two parts: - Generic name (Genus) & Specific epithet (Species)

#### **Guidelines and Principles for Nomenclature:**

- i. It should be in Latin / derived from Latin.
- ii. If it is written in Italics when types and underlined when handwritten.
- iii. It contains two parts, first word is Genus; second word is Species.
- iv. Genus name starts with Capital while species name starts with small letters.
- v. Name of the author is written in an abbreviated form after the species name. Ex. *Mangifera indica* Linn.

**Example:** *Mangifera indica* (Mango), *Homo sapiens* (Human), *Panthera pardus* (Leopard), *Felis domestica* (Cat)

Supplement to my Biology Classes

For notes visit [www.vlearn.me/sunilduttbhardwaj](http://www.vlearn.me/sunilduttbhardwaj)

Or [www.vlearn.me/biology11.html](http://www.vlearn.me/biology11.html)

or scan the QR code



## CLASS 11 BIOLOGY NOTES

BY SUNIL DUTT BHARDWAJ, SARVODAYA CO-ED VIDYALAYA, MMTTC, BEGUMPUR, NEW DELHI

**Classification** – It is the process by which anything is grouped into convenient categories based on some easily observable characteristics. Classification makes the study of organisms convenient. (category – taxa )

**Taxonomy** - The process of classification on the basis of external and internal structure along with internal structure of cell, development process and ecological information is known as taxonomy.

**Systematics** - Systematics is branch of biology that deals with cataloguing plants, animals and other organism into categories that can be named, compared and studied. Linnaeus – **Systema Naturae** (evolutionary relationships among organisms).

**Taxonomical Hierarchy** – Similarities decreases/ Differences increases

Species → Genus → Family → Order → Class → Phylum → Divisions → Kingdom

1. **Species** – Species are the natural population of individuals or a group of population which resemble one another in all essential morphological and reproductive characters so that they are able to interbreed freely and produce fertile offspring. Mango is a species *indica* of genus *Mangifera* (*Mangifera indica*).
2. **Genus**- it is a group of related species which resemble one another in certain correlated characters. All species of genus presumed to have evolved from a common ancestor. Lion, Tiger, Leopard are closely related species and placed in same genus Panther.
3. **Family**- It is a taxonomic category which contains one or more related genera. All genera of a family have some common features or correlated characters. Family Solanaceae contains a number of genera like Solanum, Withania, Datura etc. Order - Felidae (cat family) , Canidae (dog family) - Carnivora
4. **Order**- This category includes one or more related families. Families felidae and canidae are included in same order carnivore.
5. **Class** - A class is made of one or more related orders. The class dicotyledoneae of flowering plants contains all dicots which are grouped into several orders like rosales, polemoniales, renales etc.
6. **Division/Phylum**- The term phylum is used for animals while division is used for plants. They are formed of one or more class. The phylum chordate of animals contains not only the mammals but also aves, reptiles amphibians etc.

**Division**- *It is the highest taxonomic category. All plants are included in the kingdom Plantae while all animals belong to kingdom Animalia.*

**Taxonomical Aids:** These are the procedures and techniques used to store and preserve information as well as specimens of various plants and animals. These help in identification, naming, and classification of organisms.

1. Herbarium
2. Botanical garden- NBRI (Lucknow ) & IBG (Howrah )

Supplement to my Biology Classes

For notes visit [www.vlearn.me/sunilduttbhardwaj](http://www.vlearn.me/sunilduttbhardwaj)

Or [www.vlearn.me/biology11.html](http://www.vlearn.me/biology11.html)

or scan the QR code



## CLASS 11 BIOLOGY NOTES

BY SUNIL DUTT BHARDWAJ, SARVODAYA CO-ED VIDYALAYA, MMTTC, BEGUMPUR, NEW DELHI

3. Museum
4. Zoological parks.
5. Key (analytical in nature)
6. Monograph ( 1 family / genera at a time. )
7. Manuals (particular area , family/ genus/ species )
8. Flora (habitat & description of plants in a given area )

### 1. Herbarium

- It is the storehouse of collected plant specimens.
- Collected plant specimens are dried, pressed, and preserved on sheets and then arranged systematically according to the universally accepted system of classification.
- Herbarium sheet contains label regarding date, place of the collection, scientific name, family, collector's name, etc. of the specimen.

### 2. Botanical gardens

- It has the collection of living plant species that are grown for identification and reference.
- Each plant contains labels indicating their scientific name and family.
- Some famous botanical gardens are **Indian Botanical Garden, Calcutta (largest in India), Royal Botanical Garden, Kew (largest in world till date) and National Botanical Research Institute.**

### 3. Museum

- It is the repository that has a collection of various plant and animal specimens that are preserved for study and reference.
- The organisms are preserved either in preservative solution or in the form of dry specimen
- It often has a collection of skeletons of animals also.

### 4. Zoological parks

- Wild animals are kept in protected environments.
- Provides opportunity for studying the behavior and food habits of the animals.
- Natural habitats are provided as far as possible

## Key

- Taxonomic key is an artificial analytic device having a list of statements with dichotomy table of

Supplement to my Biology Classes

For notes visit [www.vlearn.me/sunilduttbhardwaj](http://www.vlearn.me/sunilduttbhardwaj)

Or [www.vlearn.me/biology11.html](http://www.vlearn.me/biology11.html)

or scan the QR code



## CLASS 11 BIOLOGY NOTES

*BY SUNIL DUTT BHARDWAJ, SARVODAYA CO-ED VIDYALAYA, MMTTC, BEGUMPUR, NEW DELHI*  
alternate characteristics which is used for identifying organisms.

- Usually two contrasting characters are used.
- The one present in the organism is chosen while other is rejected.
- Each statement of a key is called lead.
- Separate taxonomic keys are used for each taxonomic category like species, genus, family etc.
- Keys are generally analytical in nature.

Supplement to my Biology Classes  
For notes visit [www.vlearn.me/sunilduttbhardwaj](http://www.vlearn.me/sunilduttbhardwaj)  
Or [www.vlearn.me/biology11.html](http://www.vlearn.me/biology11.html)  
or scan the QR code

