

# SCIENCE SYLLABUS

## Class – 10

### 10<sup>th</sup> Class Science Syllabus – An Overview

Syllabus for Class 10 Science is designed to provide a foundational understanding of various scientific principles. It is divided into three broad sections: Physics, Chemistry, and Biology. Here's a detailed breakdown of the topics and sub-topics covered in the Class 10 Science syllabus:

**Here our chapters for ITSE Examination :-**

1. Chemical Reactions and Equations.
2. Acids, Bases, and Salts
3. Metals and Non-metals
4. Carbon and its Compounds
5. Periodic Classification of Elements
6. Life Processes
7. Control and Coordination
8. How do Organisms Reproduce?
9. Heredity and Evolution
10. Light – Reflection and Refraction
11. Human Eye and Colourful World
12. Electricity
13. Magnetic Effects of Electric Current
14. Sources of Energy
15. Our Environment
16. Management of Natural Resources.

## 1. Chemical Reactions and Equations

**Topics and Sub-topics:**

- Chemical equations
- Types of chemical reactions: Combination, Decomposition, Displacement, Double displacement, Precipitation, Neutralization, Oxidation and Reduction.
  
- Effects of oxidation in everyday life (Corrosion and Rancidity).

## **2. Acids, Bases, and Salts**

### **Topics and Sub-topics:**

- Their definitions in terms of furnishing of H<sup>+</sup> and OH<sup>-</sup> ions.
  
- General properties, examples, and uses.
  
- Concept of pH scale (Definition relating to logarithm; Simple numerical problems).
  
- Importance of pH in everyday life
  
- Preparation and uses of: Sodium Hydroxide, Bleaching powder, Baking soda, Washing soda and Plaster of Paris.

## **3. Metals and Non-metals**

## Topics and Sub-topics:

- Properties of metals and non-metals
- Reactivity series
  
- Formation and properties of ionic compounds.
  
- Basic metallurgical processes
  
- Corrosion and its prevention

## 4. Carbon and its Compounds

### Topics and Sub-topics:

- Covalent bonding in carbon compounds.
  
- Versatile nature of carbon
  
- Homologous series
  
- Nomenclature of carbon compounds

- Chemical properties of carbon compounds (combustion, oxidation, addition, substitution reaction).
- Important carbon compounds (ethanol and ethanoic acid) and their properties.
- Soaps and detergents.

## **5. Periodic Classification of Elements**

### **Topics and Sub-topics:**

- Need for classification
- Modern periodic table
- Gradation in properties
- Valency
- Atomic number, metallic and non-metallic properties.

## **6. Life Processes**

## Topics and Sub-topics:

- What are life processes?
- Nutrition: Autotrophic and Heterotrophic
- Respiration: Aerobic and Anaerobic (in yeast and humans)
- Transportation in plants and animals
- Excretion in plants and animals

## 7. Control and Coordination

### Topics and Sub-topics:

- Control and coordination in animals: Nervous system, Voluntary, involuntary, and reflex action.
- Chemical coordination: Animal hormones
- Control and coordination in plants: Tropic movements, Introduction of plant hormones.

## **8. How do Organisms Reproduce?**

### **Topics and Sub-topics:**

- Reproduction in animals and plants (asexual and sexual).
- Reproductive health - need and methods of family planning.
- Safe sex vs HIV/AIDS
- Childbearing and women's health.

## **9. Heredity and Evolution**

### **Topics and Sub-topics:**

- Heredity; Mendel's contribution – Laws for inheritance of traits.
- Sex determination: Brief introduction
- Basic concepts of evolution

## 10. Light – Reflection and Refraction

### Topics and Sub-topics:

- (i) Reflection of light by curved surfaces
- (ii) Images formed by spherical mirrors - Centre of curvature, principal axis, principal focus, focal length.
- (iii) Mirror Formula (Derivation not required).
- (iv) Refraction; Laws of refraction, refractive index - Refraction of light by spherical lens.
- (v) Image formed by spherical lenses.
- (vi) Lens formula (Derivation not required)
- (vii) Magnification - Power of a lens

## 11. Human Eye and Colourful World

### Topics and Sub-topics:

- Functioning of a lens in human eye, defects of vision and their corrections.
- Applications of spherical mirrors and lenses.
- Refraction of light through a prism, dispersion of light, scattering of light, applications in daily life (Tyndall effect, Blue colour of the sky and Reddish appearance of the sun at sunrise and sunset).

## 12. Electricity

### Topics and Sub-topics:

- (i) Electric current, potential difference and electric current.
- (ii) Ohm's law; Resistance, Resistivity
- (iii) Factors on which the resistance of a conductor depends - Series combination of resistors, parallel combination of resistors and its applications in daily life.
- (iv) Heating effect of electric current and its applications in daily life.
- (v) Electric power, Interrelation between P, V, I and R.

## 13. Magnetic Effects of Electric Current

### Topics and Sub-topics:

- Magnetic field, field lines, field due to a current-carrying conductor, field due to current-carrying coil or solenoid.
- Force on current-carrying conductor, Fleming's Left Hand Rule.
- Electric Motor, Electromagnetic induction.



- Induced potential difference, Induced current, Fleming's Right-Hand Rule.
- Direct current. Alternating current: frequency of AC, Advantage of AC over DC.
- Domestic electric circuits

## **14. Sources of Energy**

### **Topics and Sub-topics:**

- (i) Different forms of energy - Conventional and non-conventional sources of energy - Fossil fuels, Solar energy, Biogas, Wind, Water, Tidal, Geothermal, Nuclear (Brief introduction).
- (ii) Renewable versus non-renewable sources of energy.

## **15. Our Environment**

### **Topics and Sub-topics:**

- Eco-system, Environmental problems, Ozone depletion, waste production and their solutions.

- Biodegradable and non-biodegradable substances.

## **16. Management of Natural Resources**

### **Topics and Sub-topics:**

- Conservation and judicious use of natural resources.
- Forest and wildlife, Coal and Petroleum conservation.
- Examples of people's participation for conservation of natural resources.
- Big dams: Advantages and limitations.
- Water harvesting, Sustainability of natural resources.