

# **INTERNATIONAL FSP SCIENCE CONTEST**

## **COURSE OUTLINE**

### **Vibrant Youngsters Level (Grade VII & VIII)**

#### **1. Human Anatomy**

- Study of the human body structure and functions.
- Systems: skeletal, muscular, nervous, circulatory, respiratory, and digestive.

#### **2. The Cell**

##### **- Basic unit of life.**

- Cell structure: cell membrane, cytoplasm, nucleus, and organelles.
- Cell functions: metabolism, growth, reproduction, and response to stimuli.

#### **3. Movement in Living Things**

- Types of movement: voluntary (muscular), involuntary (nervous), and autonomic (automatic).
- Muscular system: skeletal and smooth muscles.

#### **4. Nutrition in Plants and Animals**

- Autotrophic nutrition (plants): photosynthesis.
- Heterotrophic nutrition (animals): ingestion, digestion, absorption, and assimilation.

#### **5. Microorganisms**

- Types: bacteria, viruses, fungi, and protozoa.
- Importance: decomposition, fermentation, and disease causation.

#### **6. Elements and Compounds**

- Elements: pure substances (e.g., hydrogen, oxygen).
- Compounds: combinations of elements (e.g., water, carbon dioxide).

#### **7. Air and its Constituents**

- Composition of air: nitrogen, oxygen, carbon dioxide, and other gases.
- Importance of air: breathing, combustion, and industrial processes.

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

- Acids: substances that donate  $H^+$  ions (e.g., hydrochloric acid).
- Bases: substances that accept  $H^+$  ions (e.g., sodium hydroxide).
- Salts: compounds formed from acids and bases (e.g., sodium chloride).

### **9. Metals and Non-Metals**

- Properties of metals: malleability, ductility, conductivity, and reactivity.
- Properties of non-metals: brittleness, non-conductivity, and low reactivity.

### **10. Friction**

- Force that opposes motion between surfaces.
- Types: static, kinetic, and rolling friction.

### **11. Thermodynamics**

- Study of heat, temperature, and energy transfer.
- Laws of thermodynamics: zeroth, first, second, and third.

### **12. Electricity and Magnetism**

- Electricity: flow of electrons, circuits, and devices.
- Magnetism: magnetic fields, forces, and properties of magnets.