



# CBSE Syllabus

Class VIII

## SCIENCE



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# SCIENCE

## Course Structure & Syllabus

Units	Topics
<b>Term I</b>	
1	Exploring Forces
2	Understanding Pressure
3	Sound
4	Language of Chemistry
5	Metals and Non Metals
6	Chemical Effects of Electric Current
7	Cell - Coordinator
8	Managing Interdependence
9	Exploring Microorganism
10	Light Exploration
<b>Term II</b>	
11	Some Natural Phenomena
12	The Night Sky
13	Synthetic Fibres and Plastics
14	Coal and Petroleum
15	Combustion and Flame
16	Air and Water Pollution
17	Cell to Organism
18	Landmark in the Human Development
19	Technology in Food Production

## Course Syllabus

### Unit 1: Exploring Forces

- Define the term force
- Explore the effects of force in our daily life
- Name different kinds of forces such as gravitational force, impact force, muscular force, magnetic force, electrostatic force and frictional force
- Classify forces into contact and noncontact forces
- Describe the effects of balanced and unbalanced forces on moving objects.
- Explore the force of friction
- Investigate the factors affecting friction
- Analyze situations to decide whether friction is desirable or undesirable
- Explain how lubricants and ball bearings reduce friction
- Suggest ways of reducing /increasing friction in daily life
- Perform simple activities related to different kinds of forces

### Unit 2: Understanding Pressure

- Understand the concept of pressure as force per unit area
- Explore the situations where high or low pressure is useful
- Name the units of pressure like N/m and Pascal
- Solve numerical based on pressure
- Investigate the effect of pressure exerted by liquids at varying depths
- Explore the impact of pressure on construction of dams and fountains
- Apply the concept of atmospheric pressure to explain real life examples

### Unit 3: Sound

- Understand and explore the production of sound
- Investigate the conditions under which sound travels
- Understand and explain the characteristics of sound
- Explore the effect of amplitude on loudness and frequency on pitch of a sound
- Understand the working of human ear
- Explore that all the vibrations are not audible
- Understand the difference between noise and pleasant sound
- Analyse the effects of noise pollution on human health
- Explore the methods to reduce noise pollution

## Unit 4: Language of Chemistry

- Recall the meaning of the terms-atoms and molecules
- Explain the formation of cations and anions
- Define the term radical.
- List acidic and basic radicals.
- Differentiate between acid and basic radicals
- Explain the formation of salts.
- Comprehend the concept of atomicity.
- Deduce the formula of salts using displacement reaction
- Write chemical equations from word equations
- Explain balancing of chemical equations
- Infer that balancing of chemical equation justifies that mass remains conserved during a chemical reaction
- Carry out an activity to show balancing of chemical equations

## Unit 5: Metals and Non-Metals

- Define the terms: displacement reaction, minerals and ores
- Explain briefly the position of metals and non-metals in the periodic table
- Identify the substances around you as metals and non-metals
- Study the physical properties of metals and non-metals highlighting the exceptions
- Differentiate between the physical properties of metals and non-metals
- Investigate the effect of air, water, acids and bases on metals and nonmetals and compare their chemical properties
- Recall the burning of magnesium ribbon in air and identify the nature of the oxide formed by using litmus solution
- Study the reactivity of different metals such as zinc and copper with the salt solution selected as Ferrous Sulphate
- Recognize the uses of metals and nonmetals in day to day life
- Investigate the factors causing corrosion in metals
- Carry out an activity to show the liberation of Hydrogen gas on reaction of Zinc metal with dilute Hydrochloric acid

## Unit 6: Chemical Effects of Electric Current

- Recall different materials which conduct electric current
- Define the terms: electrodes, electrolytes, electroplating and electrolysis

- Devise a tester to test the conducting ability of liquids, using magnetic effects of current
- Comprehend that the solutions of acids, bases and salts conduct electricity
- Describe the process of electrolysis through examples
- Infer that passage of electric current through a conducting solution causes chemical reactions
- Justify that electrical appliances should not be touched with wet hands
- Test whether fruits and vegetables also conduct electricity
- Explain the applications of electroplating in day to day life
- Describe the process that is used to carry out purification of copper
- Appreciate how the process of electroplating helps to coat a layer of more expensive metal over an object made of a cheaper metal thus giving it an expensive look. For example, silver plating on an artificial flower vase made up of ordinary metal
- Carry out an activity to show that liquids conduct electricity
- Carry out an activity to show that acidified water breaks down to form hydrogen and oxygen gas on passing current through it

### **Unit 7: Cell – A Coordinator**

- Familiarize with biographies of scientists and their work in discovering the cell
- Understand the term structural and functional unit of a living organism
- Define a 'cell'
- Explore different shapes, sizes and number of cells that make an organism(s)
- Comprehend that cell is a unit of structure and function of an organism.
- Analyze the role of a cell as a coordinator
- Identify the role of parts of a cell and relate it to the function of an organism
- Differentiate between unicellular and multicellular organisms
- Compare and illustrate plant and animal cells

### **Unit 8: Managing Interdependence**

- Relate the existence of flora and fauna in a given area
- Comprehend that different climatic conditions determine the flora and fauna
- Recognize inter –relationship between living and non-living components of the habitat
- Describe Interdependence between living organisms

- List and examine how unfavorable conditions affect lives of the organisms
- Identify and categorize man – made and natural disasters
- Relate man-made disasters to natural disasters
- Justify how human action can create conditions for natural disasters
- Prioritize responsibility to conserve wildlife
- Design campaigns for conservation of wildlife
- Classify the organisms according to their status (Endangered species)
- Illustrate with examples the role of adults, children, students for Reuse, Recycle, Reduce
- Restate that natural disasters happen more infrequently as compared to man-made disasters
- Comprehend the need to maintain a balance in the Ecosystem

### **Unit 9: Exploring Microorganism**

- Recognise the presence of organisms which are not visible to the naked eye
- Explore diversity in the world of microbes and classify them on the basis of their distinctive features
- Identify the role of microbes in various spheres of life. (medicine, industry, environment, agriculture, etc.)
- Establish active and passive unique position of viruses in nature.
- Comprehend the importance of microbes as recyclers
- Cite examples of microbes becoming a threat to the living world – animals and plants
- List some methods of curtailing food spoilage by microbes and relate them to the day to day activities which prevent food spoilage

### **Unit 10: Light Exploration**

- Understand the phenomenon of refraction of light
- Explore the factors that cause refraction of light
- Trace the path of a ray of light through different transparent media like a rectangular glass slab
- Apply the concept of refraction to real life examples
- Differentiate between convex and concave lens
- Perform experiments to show the formation of image by convex and concave lenses
- Analyse the use of different lenses for different purposes

- Understand the structure and function of human eye
- Explore common defects of vision and their correction
- Understand the need/importance of taking care of eyes
- Explore how visually challenged persons read or write and empathise with them
- Perform simple activities related to refraction of light

### **Unit 11: Some Natural Phenomena**

- Recall the structure of an atom
- Understand the production of static charges on rubbing
- Explore how charges are acquired on different objects
- Investigate the behavior of charges
- Understand the working of an electroscope
- Understand how accumulation of charges in clouds causes lightning
- Explain the precautions which need to be taken during a thunderstorm
- Understand the working of a lightning conductor
- Understand the causes of an earthquake
- Collect information on different earthquake zones
- Explore the measures taken to minimize the destruction caused by an earthquake

### **Unit 12: The Night Sky**

- Explore the phases of the moon to explain its formation
- Explain why we always see the same face of the moon
- Describe the surface of the moon
- Identify some common constellations in the night sky
- Name the planets in the solar system in order of distance from the Sun and state some facts about these
- Differentiate between a star and a planet
- Explain with diagrams how eclipses of the Sun and the Moon occur
- Describe some other members of the solar system like the asteroid, comets, meteor and meteorites
- Differentiate between natural and artificial satellite
- List the uses of artificial satellite
- Locate and use information about the universe from different sources

## Unit 13: Synthetic Fibres and Plastics

- Recall the meaning of the terms: natural fibers and fabrics
- Define the terms: monomers, polymers, plastics and polymerization
- Comprehend the transformation from fiber to fabric
- Explain the meaning of synthetic fibers
- Name various synthetic fibers
- Distinguish between natural and synthetic fibers
- Describe the properties of various synthetic fibers
- Appreciate the knowledge of the properties of synthetic fibers before selecting a fiber for a particular purpose
- Learn the effect of heat on various fibers
- State the uses of synthetic fibers in daily life
- Explain different types of plastics
- Differentiate between different types of plastics
- Appreciate the importance of biodegradable plastics over non-biodegradable ones
- Recognize different linkages of monomers in plastics
- Describe the properties and uses of plastics
- Explore the harmful effects of excessive use of plastics on environment
- Discuss the ways to reduce usage of plastics
- Carry out a survey in your area and name the marts where use of plastic bags is totally prohibited

## Unit 14: Coal and Petroleum

- Recall the meaning of the term natural resources
- Explain the term refining of Petroleum
- Classify natural resources as exhaustible and inexhaustible resources
- Appreciate the historical background of the formation of coal
- Classify different types of coal based on their carbon content
- Appreciate the uses of the products of destructive distillation of coal
- List the uses and properties of coke, coal tar and coal gas
- Describe the process of combustion of coal
- List the products of combustion of coal
- Relate the process of combustion of petroleum with coal
- Name various fractions of petroleum
- Comprehend the uses of various fractions
- Explain the process of Fractional distillation
- Describe the principle of Fractional distillation



- Infer the importance of non-renewable sources of energy
- Explore the harmful effects of excessive combustion of coal and petroleum
- Carry out an activity to study the process of destructive distillation of coal

## **Unit 15: Combustion and Flame**

- Recall the process of Combustion
- Define the term ignition temperature
- Appreciate the significance of air for combustion
- Differentiate the types of combustion on the basis of availability of oxygen
- Compare Rapid, Spontaneous and Explosive combustion
- Classify different examples of combustion observed in daily life
- Recognize the necessary conditions of combustion
- Explain the methods of controlling fire
- Recognise that attainment of ignition temperature can be made easier or difficult
- Explore the working of a simple fire extinguisher
- Appreciate the aesthetic sense of chemistry behind fire extinguisher by writing the chemical equation
- Identify different zones of a candle flame
- Explain the fuel efficiency in terms of calorific value
- Describe the causes of burning of fuel
- Carry out an activity to prepare a simple fire extinguisher
- Carry out an activity to deduce the necessary conditions required for combustion

## **Unit 16: Air and Water Pollution**

- Recall the composition of air
- Define the terms: pollution and pollutants
- Explain air pollution
- List some air pollutants
- Discuss the sources of air pollutants
- Examine the harmful effects of air pollutants
- Classify different types of smog
- Develop an understanding of Greenhouse effect and Global warming
- Name various greenhouse gases
- Explore the ways to reduce air pollution

- Predict the meaning of water pollution
- Enlist the factors responsible for water pollution
- Describe the meaning of potable water
- Determine various ways to reduce pollution
- Carry out a survey of your local area by rising factories to find out the measures taken by them to reduce air and water pollutions
- Carry out simple activities to purify water which lead to reduction in air and water pollutions

### **Unit 17: Cell to Organism**

- Recall the characteristics of living beings
- Comprehend the importance of reproduction in the continuation of species
- Categorize reproduction as Asexual and Sexual reproduction
- Describe and draw the structure of male and female reproductive system
- Relate the structure of reproductive organs with their functions
- Describe the process of fertilization
- Identify male and female gametes
- Define the term fertilization
- Outline the steps of development of foetus from a zygote
- Diagrammatically present the steps of development of a zygote
- Differentiate between external and internal fertilization
- Distinguish between ovipary and vivipary
- Understand that asexual reproduction takes place in microscopic organisms
- Describe and draw the process of Budding and Binary Fission
- Appreciate the contribution of technology in medicine (e.g., IVF) and childless couple
- Imagine the impact of cloning of different organisms on society

### **Unit 18: Landmark in the Human Development**

- Identify different physical, emotional and mental changes that occur during teenage
- Define and understand the term 'puberty' and 'adolescence and secondary sexual characters
- Discuss the difference between secondary sexual characteristics of human male and female

- Differentiate endocrine glands from exocrine glands
- Locate the functions of different endocrine glands in a human body
- Describe the main functions of each glands and the role of hormones in maintaining homeostasis
- Correlate the role of pituitary gland as master gland
- Identify different disorders/diseases caused due to malfunctioning of different glands and interpret their symptoms
- Recognise the importance of reproductive health and importance of nutritional needs of adolescents
- Discuss the possible role of hormones in life cycle of animals other than humans. Example - butterfly and frog

### **Unit 19: Technology in Food Production**

- Recognize agriculture as the biggest industry in the world
- Distinguish between various categories of crop plants on the basis of season and the part which is used the most
- Identify the benefits that horticulture has brought to the farmers as well as the economy of a country
- Compare the conventional and modern methods of agricultural practices and relate them to the progress made in the field of agro sciences and technology
- Interpret the link between scientific advancement and the development of high yielding methods using scientific methods
- Describe the role of different agricultural revolutions in making the countries self-sustainable