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NSES CURRICULUM

Elementary School: Science Content List

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SUBJECT	TOTAL TOPIC	TOTAL DURATION
Science as Inquiry Standard	14	00.48.48
Physical Science	117	05.41.01
Life Science	48	01.55.10
Earth and Space Science	70	04.21.36
Science and Technology	15	00.57.00
Science in Personal and Social Perspectives Standard	25	01.29.31
Add-On Categories	32	01.41.32
TOTAL	321	16.54.38

Science

Topic Name

Duration

Science as Inquiry Standard

- **Understandings about scientific inquiry**

 - **Simple instruments, such as magnifiers, thermometers, and rulers, provide more information than scientists obtain using only their senses**
1. Measurement of Length (Part-1) 00.03.26
 2. Measurement of Length (Part-2) 00.04.06
 3. Range of length 00.06.09
 4. Measurement of Area 00.02.04
 5. Measuring Cylinders 00.02.05
 6. Hydrometer 00.03.09
 7. Thermometer 00.02.40
 8. Bimetallic Thermometer 00.02.26
 9. Types of Thermometers (Maximum Thermometer) 00.06.58
 10. Types of Thermometer (Minimum Thermometer) 00.02.43
 11. Types of Thermometer (Combined Maximum-Minimum Thermometer) 00.03.11
 12. Clinical Thermometer 00.01.09
 13. Magnifying Lens 00.03.22
 14. Lenses 00.05.20

Science

Topic Name

Duration

Physical Science

- **Properties of objects and materials**
- **Objects have many observable properties, including size, weight, shape, color, temperature, and the ability to react with other substances. Those properties can be measured using tools, such as rulers, balances, and thermometers.**

1.	Colours and Shapes	00.00.00
2.	Physical Characteristics of Different Objects	00.00.00
3.	Distinguishing a Physical Change from a Chemical Change	00.03.14
4.	Properties of Different States of Matter	00.06.16
5.	Temperature Units and their Inter-conversion	00.04.13
6.	Properties and Uses of Plastics	00.02.58
7.	Measurement of Length (Part-1)	00.03.26
8.	Measurement of Length (Part-2)	00.04.06
9.	Measurement of Area	00.02.04
10.	Volume	00.02.23
11.	Measuring Cylinders	00.02.05
12.	Volume Determination of Solids	00.03.17
13.	Volume of an Irregular Object (Part-1)	00.01.30
14.	Volume of an Irregular Object (Part-2)	00.01.54

Science

Topic Name	Duration
15. Volume of Liquids	00.02.50
16. Beam Balance	00.04.51
17. Density (Part-1)	00.05.09
18. Determining Density of a Solid	00.00.00
19. Relative Density	00.01.25
20. Hydrometer	00.03.09
21. Heat and Temperature: The Concept	00.06.57
22. Heat and Temperature	00.01.57
23. Thermometer	00.02.40
24. Types of Thermometers (Maximum Thermometer)	00.06.58
25. Types of Thermometer (Minimum Thermometer)	00.02.43
26. Types of Thermometer (Combined Maximum-Minimum Thermometer)	00.03.11
27. Measuring Weight	00.00.00
<ul style="list-style-type: none">• Objects are made of one or more materials, such as paper, wood, and metal. Objects can be described by the properties of the materials from which they are made, and those properties can be used to separate or sort a group of objects or materials.	
1. Floating and Sinking	00.03.42
2. Separation of Mixtures using Sublimation	00.01.51
3. Separation of Soluble Components from a Mixture	00.02.45
4. Separation of a Mixture	00.00.00

Science

Topic Name	Duration
5. Physical Nature of Matter	00.02.27
6. Electric Conductors and Insulators	00.03.20
<ul style="list-style-type: none">• Materials can exist in different states- solid,liquid, and gas. Some common materials, such as water, can be changed from one state to another heating or cooling.	
1. Molecular Arrangement in Three States of Matter	00.03.16
2. Molecular Arrangement in Gases	00.03.12
3. Molecular Arrangement in Liquids	00.02.53
4. Molecular Arrangement in Solids	00.02.52
5. The Three States of Matter	00.02.44
6. The Three Phases of Water	00.02.46
7. States of Matter (Part-II)	00.03.16
8. Kinetic Theory of Matter-1 (SOLID)	00.05.27
9. Condensation	00.00.00
10. Shape of Water	00.00.00
11. Matter and its Properties	00.02.46
<ul style="list-style-type: none">• Suggested Topics	
1. Least Count of Vernier Callipers	00.03.07
2. Vernier Callipers	00.02.24
3. Screw Gauge	00.03.49
4. Measurement of Length using a Vernier Calliper	00.00.00

Science

Topic Name	Duration
5. Measurement of Volume of a Hollow Cylinder using a Vernier Calliper	00.00.00
6. Measurement of the thickness of a given sheet using a screw gauge	00.00.00
7. Measurement of Diameter of a Given Wire Using a Screw Gauge	00.00.00
8. SI Units	00.03.05
• Position and motion of objects	
• The position of an object can be described by locating it relative to another object or the background.	
1. Forces and Motion	00.05.16
2. Gravity	00.02.33
3. Position, Distance, and Displacement	00.00.00
• An object's motion can be described by tracing and measuring its position over time.	
1. Graph (Introduction)	00.02.25
2. Graphs and their Uses	00.01.41
3. Graph (Uses)	00.04.23

Science

Topic Name	Duration
<ul style="list-style-type: none">The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.	
1. Force: A Push or a Pull	00.02.22
2. Effects of Force	00.03.01
3. Types of Force (Part-1)	00.02.49
4. Types of Force (Part-2)	00.01.51
<ul style="list-style-type: none">Sound is produced by vibrating objects. The pitch of the sound can be varied by changing the rate of vibration.	
1. Sound and Hearing	00.04.48
2. Loud and Soft Sound	00.03.12
3. Transmission of Sound	00.05.12
4. Sound	00.03.52
5. Propagation of Sound Waves through Different Media	00.02.47
6. Musical Sound and Noise	00.01.15
7. Loudness and Pitch	00.02.29
8. Sound Quality or Timbre	00.03.48

Science

Topic Name	Duration
<ul style="list-style-type: none">• Light, heat, electricity, and magnetism	
<ul style="list-style-type: none">• Light travels in a straight line until it strikes an object. Light can be reflected by a mirror, refracted by a lens, or absorbed by the object.	
1. Light	00.04.33
2. Transparent, Translucent, and Opaque Objects	00.02.39
3. Light and Shadow	00.03.33
4. Mirror and Reflection	00.02.43
5. Reflection of Light and its Laws	00.04.08
6. Curved Mirrors (Construction)	00.01.52
7. Curved Mirrors	00.03.24
8. The Mirror Equation	00.07.32
9. Kaleidoscope	00.01.51
10. Refraction of Light	00.01.50
11. Refraction through Glass Slab	00.02.39
12. Refraction through a Prism	00.01.35
13. Lenses	00.05.20
14. Image Formation in a Convex Lens	00.04.58
15. Periscope	00.05.43
16. Colour of Objects	00.05.21

Science

Topic Name	Duration
<ul style="list-style-type: none">• Heat can be produced in many ways, such as burning, rubbing, or mixing one substance with another. Heat can move from one object to another by conduction.	
1. Thermal Conductors and Insulators	00.02.19
2. Heat Energy	00.03.47
3. Conduction of Heat	00.02.24
4. Transfer of Heat (Conduction)	00.04.12
5. Convection	00.02.30
6. Transfer of Heat (Radiation)	00.04.13
7. Electromagnet	00.02.33
<ul style="list-style-type: none">• Electricity in circuits can produce light, heat, sound, and magnetic effects. Electrical circuits require a complete loop through which an electrical current can pass.	
1. Electricity Around us	00.00.00
2. Electric Current	00.05.40
3. Electric Cell	00.01.49
4. Electric Switch	00.02.07
5. Bulb Connected to a Cell	00.03.52
6. Electric Components and Symbols	00.00.00
7. Simple Electric Circuit	00.01.26
8. Connections in a Simple Electric Circuit	00.00.00
9. Circuit Diagram	00.01.55

Science

Topic Name	Duration
10. Heating Effect of Electric Current	00.03.08
11. Direct and Alternating Current	00.07.14
12. Electromagnet	00.02.33
13. Electromagnet (Strength of its Magnetic Field)	00.03.40
14. Electric Bell	00.03.30
15. Magnetic Field due to a Straight Wire Carrying Current (Part-1)	00.06.02
16. Magnetic Field due to a Straight Wire Carrying Current (Part-2)	00.03.09
• Magnets attract and repel each other and certain kinds of other materials.	
1. Magnets	00.06.20
2. Attraction and Repulsion between Magnets	00.02.59
3. Make Your Own Magnet	00.03.42
4. Magnetic and Non-Magnetic Materials	00.03.26
5. Magnetic Properties of Iron and Steel	00.01.15
6. Finding Directions	00.03.40
7. Treasure Hunt using Magnetic Compass	00.00.00
8. Demagnetization	00.03.13

Science

Topic Name

Duration

Life Science

- **The characteristics of organisms**

 - **Organisms have basic needs. For example, animals need air, water, and food; plants require air, water, nutrients, and light. Organisms can survive only in environments in which their needs can be met. The world has many different environments, and distinct environments support the life of different types of organisms.**
- | | | |
|----|--|----------|
| 1. | What is a Habitat | 00.05.43 |
| 2. | Living and Non-living Things | 00.00.00 |
| 3. | Adaptation in Animals | 00.00.00 |
| 4. | Different Nests | 00.00.00 |
| 5. | Animal Habitat | 00.00.00 |
| 6. | What is an ecosystem? | 00.07.48 |
| 7. | Domestic animals and their living places | 00.00.00 |
- **Suggested Topics**
- | | | |
|----|-----------------------------|----------|
| 1. | Plants-Germination and uses | 00.07.42 |
|----|-----------------------------|----------|

Science

Topic Name	Duration
<ul style="list-style-type: none">• Each plant or animal has different structures that serve different functions in growth, survival, and reproduction. For example, humans have Distinct body structures for walking, holding, seeing, and talking.	
1. Parts of Animal	00.00.00
2. Types of Animals	00.00.00
3. Parts of Plants	00.00.00
4. Functions of our Body Parts	00.02.24
5. Leaves of Plants	00.07.41
6. Primary Functions of Roots	00.04.23
7. The Beautiful Flower	00.02.22
8. Primary Functions of Roots	00.04.23
9. Heart - an amazing pump	00.02.43
10. Kidney - The Body Filters	00.02.29
11. Brain - The Human Computer	00.02.11
12. Muscular System	00.02.24
13. Digestive System	00.02.56
14. Incredible Human Machine (I)	00.02.57
15. Bones and Muscles	00.03.13
16. Limbs	00.04.20
17. The Human Digestive System	00.03.30
18. Types of Plants	00.00.00
19. Types of root	00.00.00

Science

Topic Name	Duration
20. Bird's Feet and Beak	00.00.00
21. Different seeds	00.00.00
22. Stems	00.00.00
23. Insects	00.00.00
24. Joints and muscles	00.05.10
• Suggested Topics	
1. Locomotion in animals	00.02.49
2. Growth in plants and animals	00.02.31
• Life cycles of organisms	
• Plants and animals have life cycles that include being born, developing into adults, reproducing, and eventually dying. The details of this life cycle are different for different organisms.	
1. Life Cycle of a Butterfly	00.04.40
2. Pollination and Fertilization	00.05.21
3. Life Cycle of a Bird	00.00.00
4. Life Cycle of a Fish	00.00.00
• Suggested Topics	
1. Life cycle of a frog	00.03.16

Science

Topic Name	Duration
2. Life cycle of a mosquito	00.02.24
3. Life cycle of silk moth	00.00.00
<ul style="list-style-type: none">• Organisms and environments	
<ul style="list-style-type: none">• All animals depend on plants. Some animals eat plants for food. Other animals eat animals that eat the plants.	
1. Food Chain	00.04.00
2. The Food Web	00.05.54
<ul style="list-style-type: none">• An organism's patterns of behavior are related to the nature of that organism's environment, including the kinds and numbers of other organisms present, the availability of food and resources, and the physical characteristics of the environment. When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.	
1. Adaptation in Animals	00.00.00
<ul style="list-style-type: none">• All organisms cause changes in the environment where they live. Some of these changes are detrimental to the organism or other organisms, whereas others are beneficial.	
1. What is a Habitat	00.05.43

Science

Topic Name	Duration
<ul style="list-style-type: none">Humans depend on their natural and constructed environments. Humans change environments in ways that can be either beneficial or detrimental for themselves and other organisms.	
1. Greenhouse Effect	00.00.00
2. Recycling Waste	00.04.13
3. Save Water	00.00.00

Earth and Space Science

<ul style="list-style-type: none">Properties of earth materials	
<ul style="list-style-type: none">Earth materials are solid rocks and soils, water, and the gases of the atmosphere. The varied materials have different physical and chemical properties, which make them useful in different ways, for example, as building materials, as sources of fuel, or for growing the plants we use as food. Earth materials provide many of the resources that humans use.	
1. Rock Cycle	00.03.57
2. Groundwater	00.00.00
3. Layers of the Earth's Atmosphere	00.06.00
4. Importance of Forests	00.04.45
5. Clastic Sedimentary Rocks	00.04.44
6. Chemical and Organic Sedimentary Rocks	00.06.09

Science

Topic Name	Duration
7. Igneous Rocks	00.04.05
8. Metamorphic Rocks	00.03.08
9. What are Rocks ?	00.03.27
10. The Surface of the Earth	00.03.01
<ul style="list-style-type: none">• Soils have properties of color and texture, capacity to retain water, and ability to support the growth of many kinds of plants, including those in our food supply.	
1. Properties of Soil and its Uses	00.05.41
2. Soil Horizons	00.05.16
3. Composition of Soil	00.04.38
4. Loam	00.03.12
5. Sandy Soil	00.03.43
6. Clay Soil	00.04.40
7. Silt Soil	00.03.46
8. Causes of Soil Damage and its Conservation	00.06.55
9. What does the Soil Contain?	00.04.02
10. The pH of Soil	00.03.46
11. Soil Testing (Water Holding Capacity)	00.00.00

Science

Topic Name	Duration
<ul style="list-style-type: none">Fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time.	
1. Fossils	00.06.34
<ul style="list-style-type: none">Suggested Topics	
1. Ground water	00.03.32
<ul style="list-style-type: none">Objects in the sky	
<ul style="list-style-type: none">The sun, moon, stars, clouds, birds, and airplanes all have properties, locations, and movements that can be observed and described.	
1. Day and Night Cycle	00.03.08
2. Comet	00.00.00
3. Eclipse	00.00.00
4. Formation and Types of Clouds	00.04.12
5. The Moon	00.03.19
6. The Sun in the Sky	00.03.19
7. Phases of the Moon	00.03.35
8. The Sun (Part-1)	00.05.15
9. The Sun (Part-2)	00.05.25
10. Stars	00.03.24
11. Asteroids	hh.mm.ss

Science

Topic Name	Duration
<ul style="list-style-type: none">The sun provides the light and heat necessary to maintain the temperature of the earth.	
1. Solar Energy	00.05.38
2. The Sun (Part-1)	00.05.15
3. The Sun (Part-2)	00.05.25
<ul style="list-style-type: none">Changes in earth and sky	
<ul style="list-style-type: none">The surface of the earth changes. Some changes are due to slow processes, such as erosion and weathering, and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes.	
1. Chemical Weathering	00.03.14
2. Earthquake	00.04.13
3. Erosion	00.03.00
4. Biological Weathering	00.03.11
5. Physical Weathering	00.03.14
6. What must you do during an Earthquake?	00.01.53
7. Fold and Fault-Block Mountains	00.03.41
8. Hotspot Volcanism (Formation of the Hawaiian Islands)	00.03.40

Science

Topic Name	Duration
<ul style="list-style-type: none">Weather changes from day to day and over the seasons. Weather can be described by measurable quantities, such as temperature, wind direction and speed, and precipitation.	
1. Water Cycle	00.02.36
2. What is Weather?	00.05.56
3. Climate Change	00.05.20
4. Fronts and Weather Conditions	00.05.11
5. Air Masses	00.04.27
6. What is Climate?	00.05.41
7. What Influences Climate?	00.04.47
8. Types of Thermometers (Maximum Thermometer)	00.06.58
9. Types of Thermometer (Minimum Thermometer)	00.02.43
10. Types of Thermometer (Combined Maximum-Minimum Thermometer)	00.03.11
11. Temperature of the Earth	00.04.22
12. Humidity and Dew Point	00.01.53
13. Air and us	00.03.10
14. The Air around us	00.03.29
15. Wind	00.03.51
16. Types of Weather	00.00.00
<ul style="list-style-type: none">Suggested Topics	
1. Sea Breeze and Land Breeze	00.01.56

Science

Topic Name	Duration
<ul style="list-style-type: none">Objects in the sky have patterns of movement. The sun, for example, appears to move across the sky in the same way every day, but its path changes slowly over the seasons. The moon moves across the sky on a daily basis much like the sun. The observable shape of the moon changes from day to day in a cycle that lasts about a month	
1. Seasons	00.04.15
2. Lunar Phases	00.05.17
3. Eclipse	00.00.00
4. Day and Night	00.02.30
5. Phases of the Moon	00.03.35
6. Diurnal Motion	00.01.50
7. Solar System	00.06.12
8. Stars	00.03.24

Science and Technology

<ul style="list-style-type: none">Understanding about science and technologyTools help scientists make better observations, measurements, and equipment for investigations. They help scientists see, measure, and do things that they could not otherwise see, measure, and do.	
1. Technology-Changing lives	00.06.30

Science

Topic Name	Duration
2. Technology-Changing lives	00.06.30
3. Technology-Changing lives	00.06.30
4. Technology-Changing lives	00.06.30
5. Inclined Plane	00.02.52
6. Wheel and Axle	00.02.33
7. Lever	00.03.02
8. Pulley	00.03.45
9. Wedges and Screws	00.03.11
• Suggested Topics	
1. Simple Machines (Part - 1)	00.02.57
2. Principle of the Lever	00.03.04
3. Classes of Levers	00.03.22
4. Gears	00.06.14
• Abilities to distinguish between natural objects and objects made by humans	
• Some objects occur in nature; others have been designed and made by people to solve human problems and enhance the quality of life.	
1. Natural and Manmade Things	00.00.00

Science

Topic Name	Duration
<ul style="list-style-type: none">Objects can be categorized into two groups, natural and designed.	
1. Natural and Manmade Things	00.00.00

Science in Personal and Social Perspectives Standard

<ul style="list-style-type: none">Personal health	
<ul style="list-style-type: none">Safety and security are basic needs of humans. Safety involves freedom from danger, risk, or injury. Security involves feelings of confidence and lack of anxiety and fear. Student understandings include following safety rules for home and school, preventing abuse and neglect, avoiding injury, knowing whom to ask for help, and when and how to say no.	
1. Better Safe than Sorry	00.04.49
<ul style="list-style-type: none">Suggested Topics	
1. Put out that Fire	00.04.27

Science

Topic Name	Duration
<ul style="list-style-type: none">Individuals have some responsibility for their own health. Students should engage in personal care—dental hygiene, cleanliness, and exercise—that will maintain and improve health. Understandings include how communicable diseases, such as colds, are transmitted and some of the body’s defense mechanisms that prevent or overcome illness.	
1. Taking Care of your Teeth	00.05.41
2. Germs and Diseases	00.04.27
3. How Germs enter the Human Body	00.06.41
4. Microorganisms – Friends or Foe?	00.06.00
<ul style="list-style-type: none">Nutrition is essential to health. Students should understand how the body uses food and how various foods contribute to health. Recommendations for good nutrition include eating a variety of foods, eating less sugar, and eating less fat.	
1. Good Food Habits	00.04.49
<ul style="list-style-type: none">Different substances can damage the body and how it functions. Such substances include tobacco, alcohol, over-the-counter medicines, and illicit drugs. Students should understand that some substances, such as prescription drugs, can be beneficial, but that any substance can be harmful if used inappropriately.	
1. Passive smoking and bronchitis	00.03.20

Science

Topic Name	Duration
<ul style="list-style-type: none">• Suggested Topics	
1. Oral care	00.02.53
2. Exercise and relaxation	00.00.51
3. Microbes - Tiny but Deadly	00.03.31
4. Preservation of Food	00.00.00
<ul style="list-style-type: none">• Types of Resources	
<ul style="list-style-type: none">• Some resources are basic materials, such as air, water, and soil; some are produced from basic resources, such as food, fuel, and building materials; and some resources are nonmaterial, such as quiet places, beauty, security, and safety.	
1. What are minerals?	00.04.01
<ul style="list-style-type: none">• The supply of many resources is limited. If used, resources can be extended through recycling and decreased use.	
1. Recycling Waste	00.04.13
2. Rubbish and Litter	00.04.48

Science

Topic Name	Duration
<ul style="list-style-type: none">• Changes in Environments	
<ul style="list-style-type: none">• Environments are the space, conditions, and factors that affect an individual's and a population's ability to survive and their quality of life .	
1. Saving Energy and the Environment	00.05.57
2. Improving our School Environment	00.03.36
3. Adaptation in Animals	00.00.00
<ul style="list-style-type: none">• Changes in environments can be natural or influenced by humans. Some changes are good, some are bad, and some are neither good nor bad. Pollution is a change in the environment that can influence the health, survival, or activities of organisms, including humans.	
1. Noise Pollution	00.03.54
2. Causes of Air Pollution	00.02.43
3. Dust and Smoke	00.00.59
4. Soot	00.00.56
5. Photochemical smog	00.03.51

Science

Topic Name **Duration**

- **Science and Technology in Local Challenges**

 - **People continue inventing new ways of doing things, solving problems, and getting work done. New ideas and inventions often affect other people; sometimes the effects are good and sometimes they are bad. It is helpful to try to determine in advance how ideas and inventions will affect other people.**
1. Satellites 00.03.32

- **Science and technology have greatly improved food quality and quantity, transportation, health, sanitation, and communication. These benefits of science and technology are not available to all of the people in the world.**
1. Satellites 00.03.32

Add-On Categories

- **Matter and its Properties**
- 1. Shape of Water 00.00.00
- 2. Matter and its Properties 00.02.46

- **The Living World**
- 1. Animal Habitat 00.00.00

Science

Topic Name	Duration
2. The Living Cell	00.04.54
3. Cell - A Living Unit	00.05.20
4. World of cells	00.02.28
5. Incredible Human Machine (I)	00.02.57
6. Incredible Human Machine (II)	00.03.16
7. Brain - The Human Computer	00.02.11
8. Neurons	00.01.52
9. Heart - an amazing pump	00.02.43
10. Respiration (Breathing)	00.03.37
11. Digestive System	00.02.56
12. Muscular System	00.02.24
13. Kidney - The Body Filters	00.02.29
14. Attacking the invaders	00.02.18
15. Plant	00.02.38
16. The Beautiful Flower	00.02.22
17. Why do we need trees?	00.04.46
18. Let them Bloom	00.04.21
19. Going to School	00.05.43
20. Farming	00.07.01
21. Dispersal of Seeds by Wind and Water	00.04.19
22. Dispersal of Seeds by Animals and by Explosive Mechanism	00.04.13
23. The Human Ribs	00.02.22

Science

Topic Name	Duration
• Mechanics	
1. Types of Machines	00.00.57
2. Simple Machines (Part - 2)	00.03.13
3. Lever	00.03.09
4. Inclined Plane	00.02.34
5. Pulley (Part - 1)	00.04.01
6. Pulley (Part - 2)	00.04.55
7. Mechanical Advantage of a Gear	00.02.47
TOTAL TOPIC IN ELEMENTARY SCHOOL SCIENCE – 321	16.54.38