



SYLLABUS OUTLINE

SMETA SCIENCE OLYMPIAD

2025



SMETAOLYMPIADS.ORG

Grade 1-2

1. Life Sciences

Living and Nonliving Things: Understanding what makes something alive and what doesn't.

Plants: Learning about different types of plants, their parts (like roots, stems, leaves, and flowers), and what they need to grow.

Animals: Exploring various animals, their habitats, and basic needs.

Human Body: Identifying parts of the human body and their functions, sense and Organs.

2. Physical Sciences

Matter: Recognizing different materials (like wood, metal, fabric) and their properties.

States of Matter: Understanding solids, liquids, and gases through simple observations.

3. Earth and Space Sciences

Weather and Seasons: Observing and describing weather patterns and understanding the four seasons.

The Sky and Space: Learning about the sun, moon, stars, and basic concepts of space.

Earth's Resources: Identifying natural resources like water, soil, and air, and understanding their importance.

4. Scientific Inquiry

Experiments: Asking questions, conducting experiments, and interpreting data.

Logical: Questions to stimulate critical thinking and reasoning skills will be included

Grade 3-4

1. Life Sciences

Living Things: Characteristics, needs, and classification of plants and animals.

Human Body: Overview of major body systems.

Ecosystems: Food chains, roles of organisms, and interdependence.

2. Physical Sciences

Matter: States and properties.

Energy: Forms, uses, and energy transfer.

Forces & Motion: Basic concepts of forces affecting motion.

3. Earth and Space Sciences

Weather & Climate: Weather patterns and water cycle.

Earth's Resources: Natural resources and conservation.

Solar System: Planets and their characteristics.

4. Scientific Inquiry

Experiments: Asking questions, conducting experiments, and interpreting data.

Logical: Questions to stimulate critical thinking and reasoning skills will be included



Grade 5-6

1. Life Sciences

Cell Biology: Structure and function of cells; prokaryotic vs. eukaryotic cells.

Plant Biology: Reproduction, seed germination, and life cycles of plants.

Animal Biology: Human Body Systems, Reproduction methods and life cycles of various animals.

Adaptations and Ecology: Adaptations of organisms, food chains/webs, and nutrient cycles.

2. Physical Sciences

Chemistry: Atomic structure, elements vs. compounds, and properties of matter.

Physics: Motion, speed vs. velocity, acceleration, energy transformations, and circuits.

3. Earth and Space Sciences

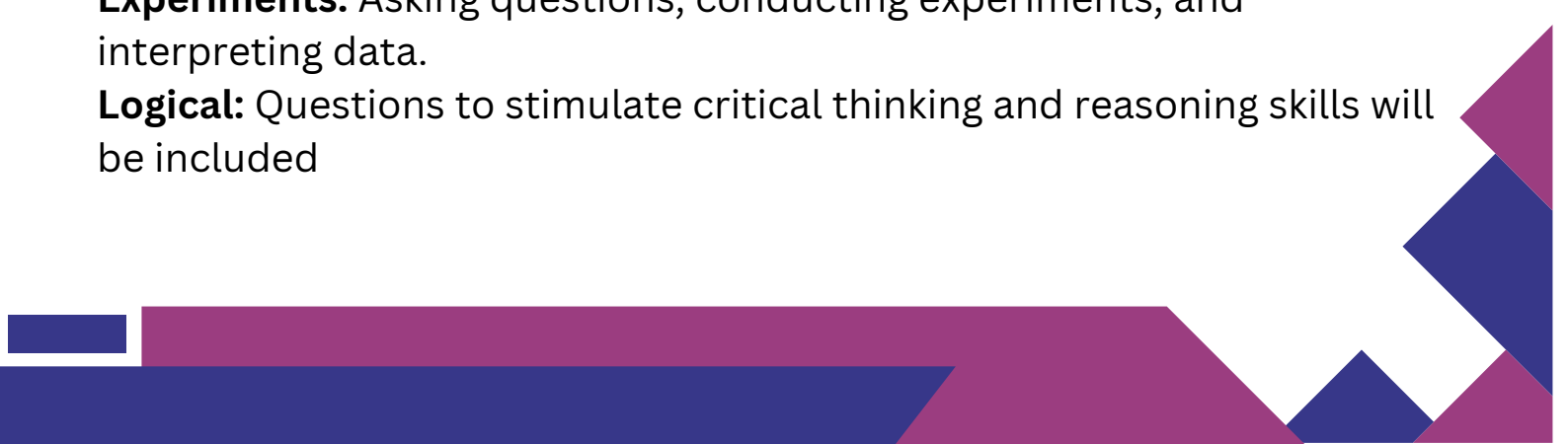
Astronomy: Phases of the moon, seasons, tides, and galaxies.

Geology: Minerals, rocks, and soil formation.

4. Scientific Inquiry

Experiments: Asking questions, conducting experiments, and interpreting data.

Logical: Questions to stimulate critical thinking and reasoning skills will be included



Grade 7-8

1. Life Sciences

Cell Biology: Structure and function of cells; prokaryotic vs. eukaryotic cells.

Human Anatomy: Overview of major body systems and their interactions.

Plant Biology: Vascular and nonvascular plants; angiosperms and gymnosperms.

Ecology: Levels of ecological organization; biotic and abiotic factors; food chains/webs; symbiotic relationships.

Microbiology: Study of microorganisms like bacteria, fungi, and protists.

Evolutionary Biology: History of life and Earth's formation; classification of organisms.

2. Physical Sciences

Chemistry: Classification of matter; phase changes; the Periodic Table; chemical symbols and formulas; law of conservation of mass.

Physics: Newton's laws of motion; work, power, and energy; energy transformations; magnetism.

3. Earth and Space Sciences

Geology: Rock cycle; types of rocks; weathering, erosion, and deposition.

Astronomy: The Universe; study of celestial bodies and cosmic phenomena.

4. Scientific Inquiry

Experiments: Asking questions, conducting experiments, and interpreting data.

Logical: Questions to stimulate critical thinking and reasoning skills will be included

Grade 9-10

1. Life Sciences

Human Biology: Study of human body systems, their functions, interactions, and common illnesses affecting organs.

Genetics: Cell cycle, cell division (mitosis and meiosis), Mendel's experiments, laws of inheritance (Mendelian and non-Mendelian), human genome, chromosomes, Punnett squares (monohybrid and dihybrid crosses), and genetic disorders.

Microbiology: Study of prokaryotes and viruses.

Ecology: Energy pyramids, trophic levels, carrying capacity, limiting factors, factors affecting population in an ecosystem, biodiversity, and sustainability.

2. Physical Sciences

Chemistry: Atomic theory, isotopes, average atomic mass, chemical reactions, parts of a chemical equation, balancing chemical equations.

Physics: Momentum, Newton's law of gravitation, waves and energy, electromagnetic waves, electromagnetism, and optics.

3. Earth and Space Sciences

Geology: Fossilization, history of Earth (including ice cores).

Astronomy: Study of stars and the Big Bang Theory.

4. Scientific Inquiry

Experiments: Asking questions, conducting experiments, and interpreting data.

Logical: Questions to stimulate critical thinking and reasoning skills will be included

Grade 11-12

1. Life Sciences

Human Biology: Study of human body systems, homeostasis, feedback mechanisms, and illnesses affecting organs.

Genetics and Biotechnology: Cell mutation, central dogma of molecular biology (DNA structure and replication), genetic engineering, ethical issues in biotechnology, and genetic disorders.

Biochemistry: Study of biomolecules (carbohydrates, lipids, proteins, nucleic acids) and polymers.

Evolutionary Biology: Invertebrate and vertebrate diversity, evolution, classification, phylogeny, cladistics, theory of evolution, natural selection, forces of evolution, and population genetics.

2. Physical Sciences

Chemistry: Scientific notation, significant figures, accuracy and precision, dimensional analysis, valence electrons, electron configurations, chemical bonding, endothermic and exothermic reactions, redox reactions, chemical nomenclature, and the Special Theory of Relativity.

Physics: Kepler's laws, laws of stratigraphy, relative and absolute dating (computing half-life), expansion of the universe, and dark matter.

3. Earth and Space Sciences

Earth's Structure: Layers of the Earth, plate tectonics, and Earth's geological processes.

Astronomy: Solar system, stars, galaxies, the Big Bang Theory, and black holes.

Earth's History: Fossil records, rock formation, and dating methods (radiometric and stratigraphy).

Climate and Weather: Climate change, weather patterns, and atmospheric layers.

Space Exploration: Space missions, space telescopes, and the future of human exploration beyond Earth.

4. Scientific Inquiry

Experiments: Asking questions, conducting experiments, and interpreting data.

Logical: Questions to stimulate critical thinking and reasoning skills will be included

