School Connect Online

SCO INTERNATIONAL OLYMPIAD

SCIENCE OLYMPIAD SYLLABUS OVERVIEW

Grade 1 to Grade 12

A chapter-wise learning guide for schools, teachers, parents, and students

Designed for Grade 1-12 learners and aligned with SCO's Science Olympiad preparation, registration, exam-cycle, proctored assessment, reporting and recognition flow.

- clear participation rules for students, schools, teachers and parents
- cycle-based exam dates using DD MMM YYYY format for global clarity
- syllabus-linked scientific pedagogy from early observation to pre-university STEM readiness
- free online study materials and practice support for registered students
- secure proctored / anti-cheating framework for trusted online Olympiad results

Science	Rules	Exam Dates	Students	Teachers
Parents	Proctored	Free Practice	Global STEM	Results

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SCO International Science Olympiad Syllabus Overview

Purpose of this document

This syllabus overview provides a grade-wise and chapter-wise understanding of the SCO International Science Olympiad pathway from Grade 1 to Grade 12. It is designed for students, schools, teachers, and parents to quickly understand what each grade studies, what learners are expected to achieve, and how each chapter supports scientific thinking, Olympiad readiness, and future STEM pathways.

Why the SCO Science Olympiad syllabus matters

Science literacy for real life: The syllabus builds the ability to observe, explain natural phenomena, interpret evidence, and make reasoned decisions about health, environment, technology, and society.

Global STEM readiness: Across countries, science education is increasingly connected with inquiry, problem-solving, innovation, sustainability, digital tools, and future careers.

Indian curriculum alignment: The grade pathway supports the Indian school progression from foundational observation to middle-school experimentation and secondary/pre-university Physics, Chemistry, and Biology depth.

Olympiad advantage: Students receive early exposure to objective questions, application-based thinking, conceptual accuracy, time management, and exam confidence.

SCO preparation support: Registered students can use SCO online learning materials, practice questions, mock tests, and multilingual preparation support to prepare with stronger access and consistency.

Grade-band progression at a glance

Grade band	Learning stage	Science focus	SCO Olympiad value
Grades 1-2	Foundational	Senses, living things, air, water, weather, safety, food, sky, and daily-life science.	Builds curiosity and observation before formal science vocabulary.
Grades 3-5	Primary expansion	Plants, animals, human body, matter, force, energy, environment, Earth, and space.	Strengthens concept clarity and reasoning through familiar examples.
Grades 6-7	Middle inquiry	Materials, separation, organisms, motion, light, electricity, water, climate, forests, and waste.	Moves learners toward evidence, measurements, and structured explanations.
Grade 8	Discipline bridge	Physics, Chemistry, and Biology foundations before secondary science.	Prepares students for subject-wise Olympiad questions and higher concepts.
Grades 9-10	Secondary readiness	Core Physics, Chemistry, Biology, health, environment, energy, and applications.	Connects school syllabus with competitive and analytical problem-solving.
Grades 11-12	Pre-university depth	Advanced Physics, Chemistry, Biology, environmental science, biotechnology, and modern applications.	Supports STEM, medicine, engineering, research, and innovation pathways.

Grade-wise chapter overview with learning outcomes and benefits

Each grade section below lists the SCO Science Olympiad chapters, the chapter concept, expected learning outcome, and practical benefit for students. Schools and teachers can use these tables for planning, parents can use them for guided support, and students can use them as a preparation roadmap.

Grade 1 - SCO International Science Olympiad

Grade focus: Observation-rich foundational science: senses, living things, safety, environment, sky, food, and daily-life science.

Student benefit: Students learn to observe carefully, ask simple questions, name natural objects, and connect science with home and school life.

Chapter	Core concept	Learning outcome	Benefit to students
1. Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
2. Animals	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
3. Human Beings and their needs	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
4. Good Habits and Safety Rules	Science in daily life, society, safety, transport, communication, housing, and community practices.	Connect classroom science with safe, healthy, and responsible everyday behaviour.	Makes learning practical, relatable, and useful for families and schools.
5. Air and Water	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
6. Weather and The Sky	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
7. Living and Non-living Things	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.

Grade 2 - SCO International Science Olympiad

Grade focus: Observation-rich foundational science: senses, living things, safety, environment, sky, food, and daily-life science.

Student benefit: Students learn to observe carefully, ask simple questions, name natural objects, and connect science with home and school life.

Chapter	Core concept	Learning outcome	Benefit to students
1. Animals and Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
2. Human Body	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.

Chapter	Core concept	Learning outcome	Benefit to students
3. Food	Food sources, nutrients, balanced diet, preservation, and safe food practices.	Relate nutrients and food handling to health and everyday life.	Encourages healthy habits and practical life awareness.
4. Housing and Clothing	Science in daily life, society, safety, transport, communication, housing, and community practices.	Connect classroom science with safe, healthy, and responsible everyday behaviour.	Makes learning practical, relatable, and useful for families and schools.
5. Occasions and Festivals	Science in daily life, society, safety, transport, communication, housing, and community practices.	Connect classroom science with safe, healthy, and responsible everyday behaviour.	Makes learning practical, relatable, and useful for families and schools.
6. Good Habits and Safety Rules	Science in daily life, society, safety, transport, communication, housing, and community practices.	Connect classroom science with safe, healthy, and responsible everyday behaviour.	Makes learning practical, relatable, and useful for families and schools.
7. Air, Water and Rocks	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
8. Transport and Communications	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
9. Earth and Universe	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.

Grade 3 - SCO International Science Olympiad

Grade focus: Primary scientific understanding: structured observation, health, plants, animals, resources, matter, energy, Earth, and everyday applications.

Student benefit: Students begin explaining causes, patterns, properties, and relationships, which builds confidence for Olympiad-style reasoning.

Chapter	Core concept	Learning outcome	Benefit to students
1. Animals and Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
2. Birds	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
3. Air, Water and Rocks	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
4. Food	Food sources, nutrients, balanced diet, preservation, and safe food practices.	Relate nutrients and food handling to health and everyday life.	Encourages healthy habits and practical life awareness.
5. Housing and Clothing	Science in daily life, society, safety, transport, communication, housing, and community practices.	Connect classroom science with safe, healthy, and responsible everyday behaviour.	Makes learning practical, relatable, and useful for families and schools.
6. Transport and Communications	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
7. Human Body	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.

Chapter	Core concept	Learning outcome	Benefit to students
8. Earth and Universe	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
9. Light,Sound and Force	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.

Grade 4 - SCO International Science Olympiad

Grade focus: Primary scientific understanding: structured observation, health, plants, animals, resources, matter, energy, Earth, and everyday applications.

Student benefit: Students begin explaining causes, patterns, properties, and relationships, which builds confidence for Olympiad-style reasoning.

Chapter	Core concept	Learning outcome	Benefit to students
1. Plant Life	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
2. Animals	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
3. Food and Digestion	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
4. Transport and Communications	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
5. Human Needs	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
6. Matter and Materials	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
7. Force, Work and Energy	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
8. Our Environment	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
9. Earth and Universe	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.

Grade 5 - SCO International Science Olympiad

Grade focus: Primary scientific understanding: structured observation, health, plants, animals, resources, matter, energy, Earth, and everyday applications.

Student benefit: Students begin explaining causes, patterns, properties, and relationships, which builds confidence for Olympiad-style reasoning.

Chapter	Core concept	Learning outcome	Benefit to students
1. Human Body and Health	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
2. Plants: Food	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
3. Natural Resources and Calamities	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
4. Food and Digestion	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
5. Food Preservation, Food Spoilage and Food Management	Food sources, nutrients, balanced diet, preservation, and safe food practices.	Relate nutrients and food handling to health and everyday life.	Encourages healthy habits and practical life awareness.
6. Importance of Water	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
7. Air and Fuels	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
8. Our Solar System	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.

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Grade 6 - SCO International Science Olympiad

Grade focus: Middle-school inquiry: materials, organisms, movement, measurement, light, electricity, water, climate, ecosystems, and data-based reasoning.

Student benefit: Students move from memorisation to explanation, experiment planning, measurement, and evidence-based scientific thinking.

Chapter	Core concept	Learning outcome	Benefit to students
1. Food: Where Does It Come From?	Food sources, nutrients, balanced diet, preservation, and safe food practices.	Relate nutrients and food handling to health and everyday life.	Encourages healthy habits and practical life awareness.
2. Components of Food	Food sources, nutrients, balanced diet, preservation, and safe food practices.	Relate nutrients and food handling to health and everyday life.	Encourages healthy habits and practical life awareness.
3. Fibre to Fabric	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
4. Sorting Materials Into Groups	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
5. Separation of Substances	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
6. Changes around Us	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
7. Getting to Know Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
8. Body Movements	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
9. The Living Organisms And their Surroundings	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
10. Motion and Measurement of Distances	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
11. Light, Shadows and Reflection	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
12. Electricity and Circuits	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
13. Fun with Magnets	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
14. Water	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
15. Air Around Us	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.

Chapter	Core concept	Learning outcome	Benefit to students
16. Garbage In, Garbage Out	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.

Grade 7 - SCO International Science Olympiad

Grade focus: Middle-school inquiry: materials, organisms, movement, measurement, light, electricity, water, climate, ecosystems, and data-based reasoning.

Student benefit: Students move from memorisation to explanation, experiment planning, measurement, and evidence-based scientific thinking.

Chapter	Core concept	Learning outcome	Benefit to students
1. Nutrition in Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
2. Nutrition in Animals	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
3. Fibre to Fabric	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
4. Heat	Core science concepts connected with observation, inquiry, and everyday applications.	Use scientific vocabulary and reasoning to explain concepts clearly.	Builds curiosity, confidence, and exam readiness.
5. Acids, Bases and Salts	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
6. Physical and Chemical Changes	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
7. Weather, Climate and Adaptations of Animals to Climate	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
8. Winds, Storms and Cyclones	Core science concepts connected with observation, inquiry, and everyday applications.	Use scientific vocabulary and reasoning to explain concepts clearly.	Builds curiosity, confidence, and exam readiness.
9. Soil	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
10. Respiration in Organisms	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
11. Transportation in Animals and Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
12. Reproduction in Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.

Chapter	Core concept	Learning outcome	Benefit to students
13. Motion and Time	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
14. Electric Current and its Effects	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
15. Light	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
16. Water: A Precious Resource	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
17. Forests: Our Lifeline	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
18. Wastewater Story	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.

Grade 8 - SCO International Science Olympiad

Grade focus: Bridge to discipline-based science: Physics, Chemistry, and Biology foundations through matter, forces, cells, resources, energy, and environment.

Student benefit: Students develop subject-specific foundations before entering higher secondary Physics, Chemistry, and Biology.

Physics pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Force and Pressure	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
2. Friction	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
3. Sound	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
4. Chemical Effects of Electric Current	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
5. Some Natural Phenomena	Physical laws, measurable quantities, and real-world applications.	Model and solve scientific problems using observation, measurement, and reasoning.	Builds stem confidence and readiness for higher science.
6. Light	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
7. Stars and the solar system	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.

Chemistry pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Synthetic Fibres and Plastics	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
2. Materials: Metals and Non-metals	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
3. Coal and Petroleum	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
4. Combustion and Flame	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.

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Biology pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Crop Production and Management	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
2. Microorganisms: Friend and Foe	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
3. Conservation of Plants and Animals	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
4. Cell Structure and Functions	Cells, heredity, evolution, ecology, biotechnology, disease, and biological systems.	Explain life at cellular, organism, and ecosystem levels using evidence and biological models.	Prepares students for medicine, life sciences, biotechnology, and environmental studies.
5. Reproduction in Animals	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
6. Reaching the age of Adolescence	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
7. Pollution of Air and Water	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.

Grade 9 - SCO International Science Olympiad

Grade focus: Secondary science readiness: conceptual Physics, Chemistry, Biology, health, environment, and quantitative reasoning for board and competitive pathways.

Student benefit: Students strengthen board-aligned concepts while preparing for higher-order, application-based questions.

Physics pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Motion	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
2. Force and Laws of Motion	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
3. Gravitation	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
4. Work and Energy	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
5. Sound	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.

Chemistry pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Matter in Our Surroundings	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
2. Is Matter Around Us Pure?	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
3. Atoms and Molecules	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
4. Structure of the Atom	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.

Biology pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. The Fundamental Unit of Life	Living systems from cells to ecosystems and their interactions.	Understand biological processes through classification, evidence, and systems thinking.	Supports health, environment, and life-science career awareness.
2. Tissues	Cells, heredity, evolution, ecology, biotechnology, disease, and biological systems.	Explain life at cellular, organism, and ecosystem levels using evidence and biological models.	Prepares students for medicine, life sciences, biotechnology, and environmental studies.

Chapter	Core concept	Learning outcome	Benefit to students
3. Diversity in living Organisms	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
4. Why do we fall ill	Living systems from cells to ecosystems and their interactions.	Understand biological processes through classification, evidence, and systems thinking.	Supports health, environment, and life-science career awareness.
5. Natural Resources	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
6. Improvement in Food Resources	Food sources, nutrients, balanced diet, preservation, and safe food practices.	Relate nutrients and food handling to health and everyday life.	Encourages healthy habits and practical life awareness.

Grade 10 - SCO International Science Olympiad

Grade focus: Secondary science readiness: conceptual Physics, Chemistry, Biology, health, environment, and quantitative reasoning for board and competitive pathways.

Student benefit: Students strengthen board-aligned concepts while preparing for higher-order, application-based questions.

Physics pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Light: Reflection	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
2. The human eye and colourful world	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
3. Electricity	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
4. Magnetic Effects of Electric Current	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
5. Sources of Energy	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
6. Light: Refraction	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.

Chemistry pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Chemical Reactions and Equations	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
2. Acids, Bases and Salts	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
3. Metals and Non Metals	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
4. Carbon and its Compounds	Substances, structures, properties, reactions, and applications in life and industry.	Connect chemical ideas with experiments, materials, and environmental responsibility.	Supports lab readiness and applied problem-solving.
5. Periodic Classification of Elements	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
6. Sources of energy	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.

School Connect Online

Biology pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Life Processes	Living systems from cells to ecosystems and their interactions.	Understand biological processes through classification, evidence, and systems thinking.	Supports health, environment, and life-science career awareness.
2. Control and Coordination	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
3. How do organisms reproduce	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
4. Heredity and Evolution	Cells, heredity, evolution, ecology, biotechnology, disease, and biological systems.	Explain life at cellular, organism, and ecosystem levels using evidence and biological models.	Prepares students for medicine, life sciences, biotechnology, and environmental studies.
5. Our Environment	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.
6. Management of Natural Resources	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.

Grade 11 - SCO International Science Olympiad

Grade focus: Pre-university science depth: Physics, Chemistry, and Biology foundations for advanced study, STEM careers, medicine, engineering, research, and innovation.

Student benefit: Students consolidate rigorous concepts and connect them to entrance readiness, research habits, and future career pathways.

Physics pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Mathematics in Physics	Physical laws, measurable quantities, and real-world applications.	Model and solve scientific problems using observation, measurement, and reasoning.	Builds stem confidence and readiness for higher science.
2. Physical World and Measurement	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
3. Motion In A Straight Line	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
4. Motion In A Plane	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
5. Laws of Motion	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
6. Work, Energy and Power	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
7. System of Particles and Rotational Motion	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
8. Gravitation	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
9. Mechanical Properties of Solids	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
10. Mechanical Properties of Fluids	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
11. Thermal Properties of Matter	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
12. Thermodynamics	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
13. Kinetic Theory	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
14. Oscillations	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.

Chapter	Core concept	Learning outcome	Benefit to students
15. Waves	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.

Chemistry pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Some Basic Concepts of Chemistry	Substances, structures, properties, reactions, and applications in life and industry.	Connect chemical ideas with experiments, materials, and environmental responsibility.	Supports lab readiness and applied problem-solving.
2. Structure of Atom	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
3. Classification of Elements and Periodicity in Properties	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
4. Chemical Bonding	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
5. States of Matter	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
6. Thermodynamics	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
7. Equilibrium	Substances, structures, properties, reactions, and applications in life and industry.	Connect chemical ideas with experiments, materials, and environmental responsibility.	Supports lab readiness and applied problem-solving.
8. Redox Reactions	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
9. Hydrogen	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
10. The s-Block Elements	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
11. The p-Block Elements	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
12. Organic Chemistry - Some Basic Principles and Techniques	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
13. Hydrocarbons	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
14. Environmental Chemistry	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.

School Connect Online

Biology pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. The Living world	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
2. Biological Classification	Living systems from cells to ecosystems and their interactions.	Understand biological processes through classification, evidence, and systems thinking.	Supports health, environment, and life-science career awareness.
3. Plant Kingdom	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
4. Animal Kingdom	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
5. Morphology of Flowering Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
6. Anatomy of Flowering Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
7. Structural Organisation in Animals	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
8. Cell: The Unit of Life	Cells, heredity, evolution, ecology, biotechnology, disease, and biological systems.	Explain life at cellular, organism, and ecosystem levels using evidence and biological models.	Prepares students for medicine, life sciences, biotechnology, and environmental studies.
9. Biomolecules	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
10. Cell Cycle and Cell Division	Cells, heredity, evolution, ecology, biotechnology, disease, and biological systems.	Explain life at cellular, organism, and ecosystem levels using evidence and biological models.	Prepares students for medicine, life sciences, biotechnology, and environmental studies.
11. Transport in Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
12. Mineral Nutrients	Living systems from cells to ecosystems and their interactions.	Understand biological processes through classification, evidence, and systems thinking.	Supports health, environment, and life-science career awareness.
13. Photosynthesis in Higher Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
14. Respiration in Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
15. Plant Growth and Development	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
16. Digestion and Absorption	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
17. Breathing and Exchange of gases	Living systems from cells to ecosystems and their interactions.	Understand biological processes through classification, evidence, and systems thinking.	Supports health, environment, and life-science career awareness.
18. Body Fluids and Circulation	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
19. Excretory Products and Their Elimination	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
20. Locomotion and Movement	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
21. Neural Control and Coordination	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.

Chapter	Core concept	Learning outcome	Benefit to students
22. Chemical Coordination and Integration	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.

Grade 12 - SCO International Science Olympiad

Grade focus: Pre-university science depth: Physics, Chemistry, and Biology foundations for advanced study, STEM careers, medicine, engineering, research, and innovation.

Student benefit: Students consolidate rigorous concepts and connect them to entrance readiness, research habits, and future career pathways.

Physics pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Electrostatics	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
2. Current Electricity	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
3. Moving Charges and Magnetism	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
4. Magnetism and Matter	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
5. Electromagnetic Induction	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
6. Alternating Current	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
7. Electromagnetic Waves	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
8. Ray Optics and Optical Instruments	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
9. Wave Optics	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
10. Dual Nature of Radiation and Matter	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
11. Atoms	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
12. Nuclei	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.
13. Semiconductor Electronics: Materials, Devices and Simple Circuits	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
14. Communication Systems	Measurement, motion, forces, energy, waves, optics, electricity, magnetism, and modern physics applications.	Use models, measurements, equations, and evidence to explain physical phenomena.	Improves quantitative reasoning, engineering readiness, and problem-solving confidence.

School Connect Online

Chemistry pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. The Solid State	Substances, structures, properties, reactions, and applications in life and industry.	Connect chemical ideas with experiments, materials, and environmental responsibility.	Supports lab readiness and applied problem-solving.
2. Solutions	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
3. Electrochemistry	Substances, structures, properties, reactions, and applications in life and industry.	Connect chemical ideas with experiments, materials, and environmental responsibility.	Supports lab readiness and applied problem-solving.
4. Chemical Kinetics	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
5. Surface Chemistry	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
6. General Principles and Processes of Isolation of Elements	Substances, structures, properties, reactions, and applications in life and industry.	Connect chemical ideas with experiments, materials, and environmental responsibility.	Supports lab readiness and applied problem-solving.
7. The p Block Elements	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
8. The d and f Block	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
9. Coordination Compounds	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
10. Haloalkanes and Haloarenes	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
11. Alcohols, Phenols and Ethers	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
12. Aldehydes, Ketones and Carboxylic Acids	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
13. Amines	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
14. Biomolecules	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
15. Polymers	Properties of matter, materials, mixtures, reactions, bonding, and chemical applications.	Classify substances, explain changes, and apply chemistry to materials, health, energy, and environment.	Strengthens analytical reasoning and prepares learners for laboratory and applied science contexts.
16. Chemistry in Everyday Life	Substances, structures, properties, reactions, and applications in life and industry.	Connect chemical ideas with experiments, materials, and environmental responsibility.	Supports lab readiness and applied problem-solving.

School Connect Online

Biology pathway

Chapter	Core concept	Learning outcome	Benefit to students
1. Reproduction in Organisms	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
2. Sexual Reproduction in Flowering Plants	Plant structure, growth, food production, and the relationship between plants and environment.	Identify plant parts, explain basic life processes, and connect plant science to food and sustainability.	Builds observation skills and early ecological awareness.
3. Human Reproduction	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
4. Reproductive Health	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
5. Principles of Inheritance and Variation	Cells, heredity, evolution, ecology, biotechnology, disease, and biological systems.	Explain life at cellular, organism, and ecosystem levels using evidence and biological models.	Prepares students for medicine, life sciences, biotechnology, and environmental studies.
6. Molecular Basis of Inheritance	Cells, heredity, evolution, ecology, biotechnology, disease, and biological systems.	Explain life at cellular, organism, and ecosystem levels using evidence and biological models.	Prepares students for medicine, life sciences, biotechnology, and environmental studies.
7. Evolution	Cells, heredity, evolution, ecology, biotechnology, disease, and biological systems.	Explain life at cellular, organism, and ecosystem levels using evidence and biological models.	Prepares students for medicine, life sciences, biotechnology, and environmental studies.
8. Human Health and Disease	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
9. Strategies for Enhancement in Food Production	Food sources, nutrients, balanced diet, preservation, and safe food practices.	Relate nutrients and food handling to health and everyday life.	Encourages healthy habits and practical life awareness.
10. Microbes in Human Welfare	Human body systems, health, nutrition, growth, coordination, and reproduction.	Explain body functions and apply health, hygiene, safety, and wellness choices.	Supports health literacy and responsible decision-making.
11. Biotechnology: Principles and Processes	Cells, heredity, evolution, ecology, biotechnology, disease, and biological systems.	Explain life at cellular, organism, and ecosystem levels using evidence and biological models.	Prepares students for medicine, life sciences, biotechnology, and environmental studies.
12. Biotechnology and its Applications	Cells, heredity, evolution, ecology, biotechnology, disease, and biological systems.	Explain life at cellular, organism, and ecosystem levels using evidence and biological models.	Prepares students for medicine, life sciences, biotechnology, and environmental studies.
13. Organisms and Populations	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
14. Ecosystem	Cells, heredity, evolution, ecology, biotechnology, disease, and biological systems.	Explain life at cellular, organism, and ecosystem levels using evidence and biological models.	Prepares students for medicine, life sciences, biotechnology, and environmental studies.
15. Biodiversity and conservation	Animal diversity, habitats, adaptations, classification, and life processes.	Compare living organisms, recognise adaptations, and classify organisms using scientific features.	Develops curiosity about biodiversity and responsible care for living systems.
16. Environmental Issues	Earth systems, resources, weather, space, environmental change, and responsible resource use.	Observe natural systems, interpret environmental issues, and propose simple conservation actions.	Builds sustainability thinking and global citizenship.

How this syllabus overview supports each stakeholder

Stakeholder	How to use the document	Preparation value	SCO value-add
Students	Use grade tables as a roadmap for chapter-wise preparation and revision.	Build concepts, accuracy, confidence, and exam readiness.	Practice questions, mock tests, free learning materials, and guided preparation.

Stakeholder	How to use the document	Preparation value	SCO value-add
Teachers	Map classroom concepts to Olympiad learning outcomes and application questions.	Plan enrichment, revision, inquiry tasks, and practice sessions.	Supports concept reinforcement and performance-led classroom planning.
Schools	Use the grade-wise pathway for academic enrichment and international benchmarking.	Strengthens STEM culture, participation, and talent identification.	Cycle-based Olympiad delivery, secure online assessment, and scalable participation.
Parents	Understand what children study at each grade and support practice at home.	Helps avoid last-minute preparation and improves learning consistency.	Provides structured preparation access and visibility into learning progress.

Recommended preparation model

1. Understand the chapter concept: Read the core idea and connect it with real-life examples.

2. Learn through observation and inquiry: Use examples, experiments, diagrams, and questioning to understand why a concept works.

3. Practice chapter-wise: Solve objective questions and review explanations to strengthen accuracy.

4. Take mock tests: Practise time management and reduce test anxiety through simulated exam conditions.

5. Review mistakes: Identify weak concepts and revise with focused practice.

Research and alignment basis

- SCO International Science Olympiad syllabus and Grade 1-12 chapter structure from the uploaded SCO syllabus document.
- SCO website references: International Science Olympiad page, features page, free reading-material page, and student preparation support pages.
- OECD PISA science framework: scientific literacy, evidence interpretation, inquiry, and application of science to real-world issues.
- UNESCO STEM direction: hands-on scientific thinking, innovation, teacher support, and global STEM participation.
- India NEP 2020 and NCF-SE 2023 direction: competency-based, inquiry-oriented, experiential, and multidisciplinary learning.

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SCO International Science Olympiad builds scientific curiosity, evidence-based thinking, and future-ready STEM confidence across Grades 1 to 12.