

SCO INTERNATIONAL SCIENCE OLYMPIAD

GRADE 7 OFFICIAL SYLLABUS

SCO International Science Olympiad

A chapter-wise, globally aligned syllabus for schools, teachers, parents, and students.

Built for conceptual clarity, scientific inquiry, environmental awareness, application-based reasoning, and Olympiad readiness.

Science	Biology	Chemistry	Physics	Environment
Scientific Inquiry	Inquiry	Data Skills	Sustainability	SCO

SCO International Science Olympiad - Class 7 Overview

The Class 7 Science Olympiad syllabus develops scientific curiosity, conceptual depth, experimental reasoning, environmental responsibility, and evidence-based decision-making. It is designed for global learners while retaining clear grade-appropriate progression across life science, physical science, chemistry, earth science, and environmental systems.

Details	Description
Exam Name	SCO International Science Olympiad
Class / Grade	Class 7
Duration	60 minutes
Question Type	Objective MCQ with reasoning, application and case-study items
Core Domains	Life Science, Physical Science, Chemistry, Earth & Environment, Scientific Inquiry
Pedagogy	Conceptual understanding, inquiry, observation, evidence, everyday science, and sustainability awareness

Global Standard Alignment

Three-dimensional science learning: students connect disciplinary knowledge with scientific practices and crosscutting concepts such as cause-effect, systems, energy, matter, structure-function, and stability-change.

Thinking and working scientifically: learners observe, classify, measure, interpret data, use models, evaluate evidence, and communicate scientific explanations.

Scientific literacy: questions encourage students to apply science to personal, social, environmental and technological contexts rather than recalling facts alone.

Sustainability and citizenship: chapters on water, forests, climate, soil and wastewater support responsible decision-making for local and global environmental challenges.

Assessment Blueprint

Section	Focus	Suggested Weightage
Core Concepts	Nutrition, respiration, transport, reproduction, fibres, heat, acids/bases, changes, soil, light, electricity	40%
Application & Reasoning	Scientific explanation, data use, cause-effect, everyday science and environmental cases	30%
Case Study Questions	Longer context-based questions linking two or more chapters	15%
Achievers Section	Higher-order reasoning, calculations, experimental interpretation and challenge problems	15%

Chapter-wise Syllabus with Small Notes and Learning Outcomes

No.	Chapter	Small Notes for Learning	Learning Outcomes
1	Nutrition in Plants	Photosynthesis, chlorophyll, stomata, autotrophic nutrition, and special modes such as parasitic and insectivorous plants.	Explain how plants prepare food, identify special modes of nutrition, and interpret simple plant nutrition scenarios.
2	Nutrition in Animals	Human digestion, ruminants, feeding habits, teeth, digestive organs and nutrient absorption.	Trace the path of food, compare animal feeding adaptations, and apply digestion concepts to real-life examples.
3	Fibre to Fabric	Natural and animal fibres, cotton, wool, silk, processing steps, fabric properties and sustainable textile choices.	Sequence fibre-processing steps and connect fibre properties with climate, use and sustainability.
4	Heat	Temperature, thermometers, heat transfer by conduction/convection/radiation, expansion, insulation and daily applications.	Use heat-transfer ideas to explain household, clothing, weather and safety situations.
5	Acids, Bases and Salts	Indicators, neutralization, salts, acids and bases in daily life, soil pH and safety awareness.	Classify substances using indicators and reason through neutralization and pH-related cases.
6	Physical and Chemical Changes	Reversible and irreversible changes, rusting, crystallization, combustion, new substance formation and evidence of change.	Distinguish physical and chemical changes using evidence such as gas, colour, heat or new substance formation.
7	Weather, Climate and Adaptations of Animals to Climate	Weather factors, climate zones, animal adaptations to cold, heat and habitat conditions.	Link animal adaptations with climatic pressures and interpret weather-climate differences.
8	Winds, Storms and Cyclones	Air pressure, wind formation, thunderstorms, cyclones, safety and disaster preparedness.	Explain wind and cyclone formation and choose safe responses during severe weather events.
9	Soil	Soil profile, humus, soil types, percolation, erosion, fertility and role in agriculture.	Compare soil types, connect soil properties with plant growth, and interpret simple soil tests.
10	Respiration in Organisms	Aerobic and anaerobic respiration, breathing, gas exchange in animals and plants, activity and respiration rate.	Explain how organisms release energy and compare respiratory structures across organisms.
11	Transportation in Animals and Plants	Circulatory system, blood vessels, heart basics, xylem, phloem and transpiration.	Explain transport of substances in animals and plants and interpret flow/pathway diagrams.
12	Reproduction in Plants	Asexual and sexual reproduction, pollination, fertilization, seed formation, dispersal and germination.	Identify reproductive parts and explain how plants reproduce and disperse seeds.
13	Motion and Time	Speed, distance, time, units, average speed, motion graphs and timing devices.	Calculate speed, compare motions, and interpret simple distance-time situations.
14	Electric Current and its Effects	Electric circuits, symbols, heating effect, magnetic effect, fuse, electromagnet and safety.	Predict circuit behavior and explain heating/magnetic effects using everyday devices.
15	Light	Reflection, mirrors, image formation, lenses/prisms at introductory level, shadows and atmospheric refraction.	Use ray ideas to predict image behavior and explain common light phenomena.
16	Water: A Precious Resource	Freshwater sources, groundwater, water table, conservation, rainwater harvesting and responsible use.	Analyze water-use problems and propose conservation methods suitable for homes and schools.
17	Forests: Our Lifeline	Forest layers, food chains, decomposers, biodiversity, carbon balance, soil protection and water cycle.	Explain forest ecosystem functions and evaluate consequences of deforestation.

18	Wastewater Story	Sewage, pollutants, treatment steps, sanitation, reuse, public health and environmental responsibility.	Describe wastewater treatment steps and justify safe sanitation and water-reuse practices.
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Teaching and Preparation Guidance

For students: focus on concept maps, observation-based examples, short experiments, formula practice and explanation writing.

For teachers: use demonstrations, inquiry questions, discussion of local environmental issues, and short data tables to build reasoning.

For schools: maintain a balance between textbook learning, lab safety, environmental responsibility, and Olympiad-style application questions.

For parents: encourage children to explain everyday science phenomena such as boiling, rusting, shadows, rainwater harvesting and digestion in their own words.

Reference Frameworks Used for Global Alignment

National Academies Framework for K-12 Science Education: scientific and engineering practices, crosscutting concepts and core disciplinary ideas.

Next Generation Science Standards: middle-school life science, physical science, earth science and engineering practices.

Cambridge Lower Secondary Science: Thinking and Working Scientifically, scientific models, enquiry and science-in-context approach.

OECD PISA Science Framework: scientific literacy, evidence-based reasoning, and application of science to real-life challenges.

UNESCO Education for Sustainable Development: sustainability, climate, biodiversity, water and responsible action.