
# Science Curriculum Overview: Iran

| Grade | Life Systems | Matter and Energy | Structures and Mechanisms | Earth and Space Systems | STEM Skills and Connections |
|---|---|---|---|---|---|
| Grade 6 | The nature of science and a scientific experiment, infectious and non-infectious disease, causes of Infectious disease, how to keep healthy, photosynthesis, fungi, | Types of Energy (electric, magnetic, gravitational) Minerals, Metals, Rocks, Fossil, chemical changes and reactions, important elements of life | Force, Types of Force, Friction, Motion, Speed, Types and Parts of Movement | Earth layers (chemical substance and types of layers), natural phenomenon like earthquake & volcano | Accurate observation of daily life phenomena, how to use microscope, gathering information about a simple technology |
| Grade 7 | Atoms & chemical expressions, ecology, water, ground & surface water, the important effect of water on life, water contaminants, minerals and microbes in water, free and pressured water reservoires, cells, cell structure, and human body, hygiene and health, healthy food, heart and blood, blood components, body organs | Characteristics & types of substances, parts of substances, uses of energy, changes in energy, energy conservation law, potential and active energy, food energy, energy resources (wind, steam) | Stones & their particle size and diameter, parpermeability, the mechanism of limestone and limestone caves, food digestion mechanism, food and blood circulation, heart structure, the body systems and their functions on their own and in relation with others | The earth resources (e.g., the raw material for producing glass, iron, & cement), the effect of soil and the size of soil particles on the absorption of water, the effect of earth's seams and fractures on the absorption of water, eclipse | Thought & experiment, the importance of nature as a direct or indirect source of substance, categorizing skills, keeping nature, the power of god as the creator of nature , maintaining natural resources like lakes, measurement , tools & units of measuring volume, weight, mass density, time, the relation between science & math, the amount of energy people need to stay functional, how to save energy, how to stay healthy (through hygiene ) |
| Grade 8 | Nervous system & its different parts, voluntary & involuntary activities, components of nervous tissue, nerve cells & its parts, nature of nerve messages, nerve and its types, structure of sensory organs, how sensory receptors work, most important bones in our skeleton, types of muscle tissues, hormonal regulation, important glands of human body and their location, internal factors affecting growth, the role of thyroid in body metabolism, blood sugar regulation, the body's coping mechanism with stress, important glands on regulating calcium level in body, sexual changes in men and women, endocrine system of the body, DNA, gene, chromosomes, the process of mitosis, the relation between mitosis & cancer, influential environmental factors on cancer creation | Pure & mix substance, substance categorization, mix types (homogeneous, non-homogeneous), mix & separate, solvent & soluble, characteristics & types of substances, states of matter, and their change to another state, chemical reactions, acids, bases, oxides, chemical fertilizers, salts , sediments, the process & signs of chemical reactions, heat as a type of energy , fire triangle (burning substance+ oxygen+heat), energy release methods, metals' chemical reactions & producing electricity as a result, radioactive materials & their usage, positive and negative ions, periodic table, he chemical reaction of glucose + enzymes to oxygen and creating energy for human body, electricity, creating electric charge through friction, contact, & induction, the effect of electric loads on each other, difference between conducting & non conducting material, the production of electric charge based on the atomic model, electronic potential difference, magnetism, different types of magnets , Light (characteristics, sources, emission), & mirrors | Atoms and their structure, constituent particles of atoms (neutron, proton, & electron), atoms' elements and chemical names, Bohr atomic model, atomic numbers, reproduction in living things, sexual and asexual reproduction methods, meiosis division in sexual reproduction, asexual reproduction of plants, types of fertilization in animals, biological processes, energy conversion in power generators, Refraction of light and lenses | Lightning and electric charge-discharge, minerals, their types, & characteristics, how they are named, dangerous minerals, stone types (metaphoric, igneous, sedimentary stones), their characteristics and usage, Weathering and its types, characteristics, definition of erosion, rock cycle, importance and benefits of weathering | Gaining the skills for doing experiments, writing the chemical symbol of isotopes, the benefits and harms of chemical reactions & their effects on our life, understand the power of God in nature's order, how to keep healthy through understanding the sensory and moving system of human body, understanding the effect of hormones on body health, biotechnology, hereditary & environmental traits, the calculation of potential difference in a simple circuit, current intensity, & electrical resistance, magnetism & its effect on industry, compass function, making an electronic magnet, table salt (Halit mineral), understanding the type of weathering and rock cycle in students' region & its effect on their life |

| | | | | | |
|---|---|---|---|---|---|
| Grade 9 | Pascal's principle, machines( torque, levers, pulleys, gears and ramps), Grouping of organisms, bacteria, protozoa, fungi, plants, animals, grouping of plants, vascular plants, non-vascular plants, seed plants and seedless plants, Classification of animals( vertebrates and invertebrates), invertebrates include sponges, corals, worms, molluscs, arthropods, echinoderms, arthropods, insects, crustaceans, arachnids, millipedes; Vertebrates include fish, amphibians, reptiles, birds, mammals, coexistence | Materials and their role in life, materials and their compounds. Classification of elements based on Bohr's atomic model, minerals. Organic & nonorganic materials, metals and their compounds. Nonmetals and their compounds, and their compounds, metals' reactivity, applications of phosphorus, silicon, carbon, chlorine, chlorine and their compounds and Helium, Neon gases, Electron exchange and ionic bonding, constituent particles of materials, Particles that make up materials and their structure. Electrically conductive materials, transmission of electricity by solutions, specific chemical changes and reactions, Electron exchange criteria between atoms, movement, force, The plate structure of the earth, the moving continents, the hypothesis of the expansion of the ocean floor, the movement of the earth's plates and its related consequences, fossils, Pressure and its effects, force and pressure, pressure in liquids, pressure in gases, the carbon cycle, crude oil, crude oil compounds, separation of hydrocarbons | Electron sharing and covalent bonding, ions, molecules, atoms, law of conservation of mass, the change in the amount of carbon dioxide on the planet, | Natural cycles and balance about the Earth, the challenges caused by the consumption of crude oil, the production of carbon dioxide, the durability of petroleum plastics, space, astronomy, galaxy, stars, orientation, determination of Qibla, solar system, travel to space | Recognize natural and unnatural polymers around them, understanding the properties of natural and synthetic fibers such as plastic, Preparation of crystals, Drawing the structure of ions and writing chemical symbols, polymerization and the manufacture of plastics, |


Adopted from:
The Ontario Science and Technology Curriculum, (2022), https://www.dcp.edu.gov.on.ca/en/curriculum/science-technology
Iran's grade 6 science teacher guide: chrome-extension://gphandlahdpffmccakmbngmbjnjiiahp/http://www.chap.sch.ir/sites/default/files/books/91-92/196/001-051-C74-27.pdf
Iran's grade 7 science teacher guide: chrome-extension://gphandlahdpffmccakmbngmbjnjiiahp/http://chap.sch.ir/sites/default/files/lbooks/93-94/559/C77.pdf
Iran's grade 9 science teacher guide: chrome-extension://gphandlahdpffmccakmbngmbjnjiiahp/http://chap.sch.ir/sites/default/files/lbooks/94-95/559/C84.pdf
Iran's grade 9 science teacher guide: chrome-extension://gphandlahdpffmccakmbngmbjnjiiahp/http://chap.sch.ir/sites/default/files/lbooks/95-96/559/C90.pdf