Viking International School

Science Curriculum

CURRICULUM INTENT

Viking International School's curriculum aligns with the Danish *Fællesmål* and meets the standards of the British National Curriculum, leading to GCSE-level outcomes.

We focus on developing critical thinking, creativity, and problem-solving, encouraging students to apply knowledge across subjects through inquiry-based and real-world learning. Collaboration, communication, and cultural understanding are central to our approach. Students learn to work effectively with others, respect diverse perspectives, and develop as responsible global citizens.

Digital literacy and responsible technology use are integrated throughout all subjects to prepare students for the modern world. We promote a growth mindset and lifelong learning, ensuring that our curriculum provides the knowledge, skills, and values students need to succeed in further education—whether in Denmark or internationally—and to contribute positively to society. Each child is supported to reach their full potential through personalized teaching.

The purpose of Science teaching at VIS is to develop students' ability to understand, investigate, and apply scientific knowledge and inquiry skills confidently and appropriately for their age and context. The subject fosters curiosity, critical thinking, and global awareness, preparing students to engage meaningfully with the world around them and contribute to solving real-world challenges.

Students' progress in Mathematics is assessed continuously through classroom participation, practical application, and formative feedback. Summative assessments and self-reflection are used to evaluate understanding and development in relation to the Fællesmål sub-goals.

Learning connects naturally to other areas of the curriculum, supporting a holistic educational experience that encourages students to make connections across disciplines and apply their knowledge in diverse contexts.

Teaching is adapted to meet individual learning needs, ensuring accessibility and inclusion for all learners. Students who require additional support, such as those with dyslexia or other learning differences, benefit from personalized instruction, assistive technology, and tailored strategies that help them thrive within the classroom environment.

YEARGROUP ALIGNMENT

Danish	VIS	Key Stage (KS)
0 Klase	IC 1	KS 1
1 Klase	IC 2	KS 1
2 Klase	IC 3	KS 1
3 Klase	IC 4	KS 2
4 Klase	IC 5	KS 2
5 Klase	IC 6	KS 2
6 Klase	IC 7	KS 3
7 Klase	IC 8	KS 3
8 Klase	IC 9	KS 4
9 Klase	IC 10	KS 4
10 Klase	IC 11	KS 4

OVERVIEW

Requirement (Friskoleloven §1a)	How VIS meets this
Final Goals	Defined through Fælles Mål competence objectives for each subject area.
Sub-goals	Described in the “Skill” and “Knowledge” columns per Key Stage.
Teaching Plan	This document outlines how goals are taught, sequenced, and assessed through each phase.

Common Goals Outcomes Expected to be reached by end of each Key Stage (KS)

Competence Area	After KS 1	After KS 2	After KS3	After KS 4
Working Scientifically	Students can plan and carry out investigations, collect and analyze data, use models to explain ideas, and communicate findings clearly using scientific language in real-world contexts.	Pupils can plan and carry out investigations, use models to represent ideas, communicate findings clearly with scientific vocabulary, and relate their understanding to real-world contexts.	Students can plan and conduct investigations safely and systematically, collect and analyze data using appropriate tools and digital technologies, apply models to explain phenomena, and communicate findings clearly using scientific language and evidence.	
Biology	Students learn about living things and their basic needs, life processes such as growth and reproduction, and how organisms are classified. They explore habitats and the relationships between plants, animals, and their environment, while understanding the importance of health, food, and exercise for survival.	Pupils can describe and explain living processes and life cycles, use models to represent biological structures and systems, communicate ideas using accurate scientific vocabulary, and relate biological concepts to real-world contexts such as health, environment, and ecosystems.	Students can understand the structure and function of living organisms, explain life processes such as nutrition, respiration, reproduction, and interdependence in ecosystems, and evaluate the impact of human activity on health and the environment using scientific reasoning.	
Chemistry and Physics	Students investigate the properties of materials and how they change through processes such as melting, freezing, and dissolving, while exploring states of matter and simple mixtures. They also learn about forces and motion, light and sound, and energy in everyday contexts, including heat and electricity. Through hands-on activities, they begin to understand patterns in physical phenomena and the role of materials and energy in daily life.	Pupils can describe and explain the properties, changes, and interactions of materials and physical phenomena, use models to represent particles, forces, and systems, communicate ideas and findings using accurate scientific vocabulary, and relate concepts to real-world contexts such as energy, movement, materials, and environmental impact.	Chemistry: Students can describe the particle model and its applications, explain the properties and behaviour of materials, understand chemical reactions and conservation of mass, and evaluate the role of chemistry in everyday life and sustainability. Physics: Students can explore and explain motion, forces, energy, waves, electricity, and space, apply mathematical and graphical representations to analyse physical phenomena, and relate scientific principles to technological and societal contexts.	

Area of competence	Competency goals		After KS1									
			Planning and Designing Investigations		**Practical Skills and Measurement**		**Digital Tools and Data Handling**		**Scientific Modelling & Representation**		**Science in Context**	
Working Scientifically	Students can plan and carry out investigations, collect and analyse data, use models to explain ideas, and communicate findings clearly using scientific language in real-world contexts.		**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**
		IC1	Ask simple questions and suggest ways to find answers through observation and guided investigation.	Students know that questions can be answered by observing and comparing, and understand the idea of fairness in testing.	Use basic tools (e.g., hand lenses, rulers) safely to make simple observations and measurements.	Students know common measuring tools and units (e.g., length, weight) and basic safety rules.	Record observations using drawings, simple tables, and pictograms.	Students know how to organize data visually and recognize patterns in simple charts.	Use drawings and simple diagrams to represent objects and processes.	Students know that models help explain ideas and can identify basic scientific symbols.	Talk about how investigations relate to everyday experiences (e.g., weather, materials).	Students know examples of science in daily life and why observations are useful.
		IC 2	Plan simple investigations, make predictions, and identify what to observe.	Students know what makes a question testable and understand the concept of fair testing.	Use measuring tools accurately (e.g., rulers, thermometers) and follow safety rules.	Students know standard units (cm, °C) and how to measure consistently.	Record data in tables and create simple bar charts using digital tools.	Students know how to enter data correctly and choose suitable formats for display.	Create simple diagrams and models to explain processes (e.g., plant growth).	Students know why models are used and can interpret basic diagrams.	Explain how investigations link to real-world situations (e.g., health, habitats).	Students know examples of science in technology and the environment.
		IC 3	Design investigations, identify variables, and make predictions based on prior knowledge.	Students know independent, dependent, and controlled variables and why they matter.	Select appropriate tools and measure accurately using standard units.	Students know how to ensure precision and reliability in measurements.	Use digital tools to create tables, charts, and graphs and interpret patterns.	Students know how to analyze data and identify trends.	Can use models and diagrams to explain processes and recognize limitations of models.	Students know common scientific symbols and conventions.	Relate investigations to broader scientific concepts and real-world applications.	Students know examples of science in health, technology, and environmental issues.
			Scientific Language and Literacy		**Communicating Scientific Ideas**							
			Skill (Students can…)	**Knowledge**	**Skill (Students can…)**	**Knowledge**						
		IC1	Use basic scientific words (e.g., names of plants, senses) when describing observations.	Students know simple vocabulary linked to topics and its meaning.	Share findings orally and through drawings or simple sentences.	Students know that results can be shown in pictures or words and why sharing ideas is important.						
		IC 2	Use scientific vocabulary accurately in oral and written explanations.	Students know topic-specific terms and their meanings.	Write short reports with headings (question, method, results).	Students know the structure of a simple scientific report.						
		IC 3	Use precise scientific terminology in explanations and reports.	Students know advanced vocabulary for topics and its correct usage.	Present findings clearly in written reports, oral presentations, and visual formats.	Students know how to structure a report and communicate to different audiences.						

Biology

Students learn about living things and their basic needs, life processes such as growth and reproduction, and how organisms are classified. They explore habitats and the relationships between plants, animals, and their environment, while understanding the importance of health, food, and exercise for survival.

		Plants		Animals and Habitats		Human Body					
		Skill (Students can…)	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**				
	IC1	Identify and name common plants and trees, and describe basic structures of flowering plants.	Names of common plants and trees, and understanding of basic plant structures.	Identify and name common animals and classify them by diet; describe and compare their structures.	Animal groups (fish, amphibians, reptiles, birds, mammals), diets (carnivore, herbivore, omnivore), and body structures.	Identify, name, draw, and label basic parts of the human body and link them to senses.	Names and positions of body parts and associated senses.	N/A	N/A	N/A	N/A
	IC 2	Describe how seeds and bulbs grow and what plants need to stay healthy.	Plant growth requirements (water, light, temperature) and life cycle basics.	Identify living, dead, and never-alive things and explain how habitats meet basic needs. Can explain that animals have offspring and describe their basic survival needs	Characteristics of living things, habitat types, and interdependence of organisms. Animal life cycles and survival essentials (food, water, shelter).	N/A	N/A	N/A	N/A	N/A	N/A
	IC 3	Identify and describe functions of plant parts and explain plant life cycles.	Plant anatomy, growth requirements, and life cycle stages.	Sort animals into groups based on features and reproduction and describe their habitats.	Animal classification criteria and habitat characteristics.	N/A	N/A	N/A	N/A	N/A	N/A

Statistics

S*tudent can* collect, record, interpret, and present data using charts, tables, pictograms, and digital tools, answer one-step and two-step questions, and compare and organize information accurately.

	Statistics	
	Skill (Students can…)	**Knowledge**
IC1	N/A	N/A
IC 2	Interpret and construct simple charts and tables.	Knows pictograms, tally charts, and how to compare data.
IC 3	Interpret and present data using bar charts and tables.	Knows scales, categories, and how to answer one- and two-step questions.

			Materials		Meteorology		Forces and Magnets		Light		Geology	
Area of competence	**Competency goals**		**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**
Chemistry and Physics	Students investigate the properties of materials and how they change through processes such as melting, freezing, and dissolving, while exploring states of matter and simple mixtures.	**IC1**	Compare and group everyday materials by physical properties and identify what objects are made of.	Common materials (wood, plastic, glass, metal, water, rock) and their properties.	Observe seasonal changes and describe associated weather and day length variations.	Characteristics of the four seasons and how day length changes.	N/A	N/A	N/A	N/A	N/A	N/A
	They also learn about forces and motion, light and sound, and energy in everyday contexts, including heat and electricity.	**IC 2**	N/A	N/A	N/A	N/A	Understand magnetic attraction/repulsion and identify magnetic materials.	Properties of magnets, magnetic materials, and poles.	N/A	N/A	N/A	N/A
	Through hands-on activities, they begin to understand patterns in physical phenomena and the role of materials and energy in daily life.	**IC 3**	N/A	N/A	N/A	N/A	Compare movement on surfaces, distinguish contact/non-contact forces, and explain magnetism.	Types of forces, magnetic properties, and poles.	Explain how light enables vision, reflection, and shadow formation; classify materials by transparency.	Light properties, reflection, transparency, and shadow patterns.	Compare rocks, recognize fossils, and explain soil formation.	Rock types, fossil formation, and soil composition.

After KS2

			Planning and Designing Investigations		Practical Skills and Measurement		Digital Tools and Data Handling		Scientific Modelling and Representation		Science in Context	
Area of competence	**Competency goals**		**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**
Working Scientifically	Pupils can plan and carry out investigations, use models to represent ideas, communicate findings clearly with scientific vocabulary, and relate their understanding to real-world contexts.	**IC 4**	Ask relevant questions and set up simple control variables.	How to identify variables and ensure fairness in investigations.	**M**ake systematic observations and take accurate measurements using standard units.	How to use basic scientific tools safely and correctly.	Use digital tools for simple measurements and data presentation.	How to record and compare data using technology.	Create simple models (e.g., food chains, water cycle).	How models represent scientific processes and relationships.	Relate investigations to real-life contexts.	How science applies to everyday situations and environmental issues.
		IC 5	Plan different types of scientific enquiries to answer questions, including fair tests with variables.	How to identify independent, dependent, and control variables and ensure reliability in investigations.	Take accurate measurements using a range of scientific equipment and record data systematically.	How to use measuring instruments correctly and apply standard units for precision.	Use digital tools to record, analyze, and interpret data in tables, graphs, and charts.	How to select appropriate digital tools for data presentation and understand patterns in results.	Create models to represent processes such as life cycles, forces, or the solar system.	How models simplify complex systems and support explanation of scientific ideas.	Relate investigations to real-world issues such as sustainability, health, and technology.	How scientific knowledge connects to societal challenges and environmental responsibility.

		IC 6	Design complex, multi-variable investigations and justify methodological choices.	How to plan controlled experiments, predict outcomes, and evaluate reliability and validity.	Take precise measurements, repeat readings for reliability, and use advanced equipment.	How to minimize error, calibrate instruments, and apply precision techniques.	Use digital tools for advanced data analysis, including graphing software and simulations.	How to interpret large datasets, identify trends, and apply statistical reasoning.	Design composite models (e.g., circulatory system, energy systems) and explain their function.	How models integrate multiple concepts and support predictions or problem-solving.	Link findings to societal and environmental contexts, including sustainability and technology.	How scientific evidence informs decision-making and addresses global challenges.
			Communicating Scientific Ideas									
			Skill (Students can…)	**Knowledge**								
		IC 4	Present findings clearly in tables and charts.	How to structure explanations and share results effectively.								
		IC 5	Present findings clearly using charts, graphs, and digital reports.	How to structure scientific communication for clarity and audience understanding.								
		IC 6	Present findings with causal explanations using digital media and formal scientific language.	How to communicate complex ideas effectively to different audiences.								
Biology	Pupils can describe and explain living processes and life cycles, use models to represent biological structures and systems, communicate ideas using accurate scientific vocabulary, and relate biological concepts to real-world contexts such as health, environment, and ecosystems.		**Living Things and Habitats**		**Human Body**		**Measurement**					
			Skill (Students can…)	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**				
		IC 4	Group living things, use classification keys, and construct food chains.	Characteristics of organisms, roles in food chains, and how environmental changes affect habitats.	Describe the digestive system and types of teeth, and relate these to health.	Functions of digestive organs and teeth, and how diet impacts well-being.	N/A	N/A				
		IC 5	Describe life cycles and explain reproduction in plants and animals.	Stages of life cycles, reproduction processes, and links to biodiversity.	Describe changes as humans develop to old age and relate these to health.	Physical and developmental changes across life stages.	N/A	N/A				
		IC 6	Classify living things into broad groups and justify classifications.	Scientific criteria for classification and links to adaptation and sustainability.	Describe the circulatory system and explain how lifestyle affects health.	Functions of heart, blood vessels, and blood, and impacts of diet and exercise.	Explain evolution and inheritance and relate adaptation to environmental responsibility.	How species change over time, variation in offspring, and fossil evidence.				

			Materials		Waves		Electricity		Earth and Space		Forces	
Chemistry and Physics	Pupils can describe and explain the properties, changes, and interactions of materials and physical phenomena, use models to represent particles, forces, and systems, communicate ideas and findings using accurate scientific vocabulary, and relate concepts to real-world contexts such as energy, movement, materials, and environmental impact.		**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**				
		IC 4	Compare solids, liquids, and gases, observe changes of state, and explain the water cycle.	Properties of states, processes of evaporation and condensation, and environmental implications.	Explain how sounds are made and travel, and explore pitch and volume patterns.	Sound is caused by vibrations and how these relate to pitch, volume, and distance.	Identify appliances, build simple circuits, and test conductors and insulators.	Circuit components, how switches work, and properties of conductors and insulators.	N/A	N/A	N/A	N/A
		IC 5	Compare materials, explain dissolving, and distinguish reversible and irreversible changes.	Properties of materials, separation methods, and environmental impact of material use.	N/A	N/A	N/A	N/A	Describe movements of Earth, Moon, and planets, and explain day and night.	Earth's rotation and orbit, Moon phases, and their relation to time and seasons.	Explain gravity, friction, and resistance, and use levers, pulleys, and gears.	How forces act and how simple machines change force effects.
		IC 6	N/A	N/A	Explain how light travels and why shadows form.	Light travels in straight lines and how reflection and refraction occur.	Use circuit symbols, explain variations, and design circuits for real-world applications	Effects of voltage and components on brightness and energy efficiency.	N/A	N/A	N/A	N/A

Area of competence	**Competency goals**		**After KS3**									
			Planning & Designing Investigations		**Practical Skills & Measurement**		**Digital Tools & Data Handling**		**Scientific Modelling & Representation**		**Science in Context**	
Working Scientifically	Students can plan and conduct investigations safely and systematically, collect and analyze data using appropriate tools and digital technologies, apply models to explain phenomena, and communicate findings clearly using scientific language and evidence.		**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**
		IC7	Plan simple enquiries, identify variables, and follow a clear method safely.	Understand independent, dependent, and control variables; basic risk assessment.	Use common lab equipment and digital sensors to make accurate measurements.	Know SI units, correct use of apparatus, and safety rules.	Record data in tables and create bar/line graphs using correct scales.	Understand headings, units, and basic graph conventions.	Use simple diagrams and models to explain processes (e.g., particle model, food chains).	Know why models are used and their limitations.	Relate investigations to everyday examples and discuss simple societal links.	Understand basic applications of science in health, environment, and technology.
		IC 8	Design systematic investigations, justify methods, and adapt plans when needed.	Understand accuracy, precision, repeatability, and reproducibility.	Select appropriate apparatus, including advanced digital tools, for reliable data.	Know how to ensure precision and manage risks effectively.	Use spreadsheets and simulations to process data and choose effective representations.	Understand data analysis techniques and representation choices.	Apply and evaluate computational or rule-based models to explain phenomena.	Know how models compare to real data and their limitations.	Evaluate societal and environmental implications of scientific findings.	Understand sustainability, ethics, and reliability of sources.

			Scientific Language and Literacy		**Communicating Scientific Ideas**							
			Skill (Students can…)	**Knowledge**	**Skill (Students can…)**	**Knowledge**						
		IC 7	Use key scientific vocabulary and SI units consistently.	Know topic-specific terms and standard units.	Present findings in short written or oral formats using evidence.	Understand structure of a simple report (method, results, conclusion).						
		IC 8	Communicate fluently using precise scientific terminology and notation.	Know conventions like formulae, standard form, and correct symbols.	Construct reasoned arguments and present findings in varied formats for different audiences.	Understand structured argumentation and evidence-based reasoning.						
			Cells & Organisation		**Movement and the Human Body**		**Nutrition and Digestion**		**Gas Exchange and Respiration**		**Reproduction**	
Biology	Students can understand the structure and function of living organisms, explain life processes such as nutrition, respiration, reproduction, and interdependence in ecosystems, and evaluate the impact of human activity on health and the environment using scientific reasoning.		**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**						
		IC7	Use a microscope to identify basic plant and animal cell parts and describe their functions.	Names and roles of organelles; concept of cells as building blocks of life.	Identify major bones, muscles, and joints and explain how they work together for movement.	Structure of skeletal and muscular systems; antagonistic muscle pairs.	Describe components of a balanced diet and outline the digestive system.	Functions of food groups; basic digestive processes.	Describe the structure of lungs and explain aerobic respiration using word equations.	Role of oxygen and glucose; differences between aerobic and anaerobic respiration	Describe human reproductive organs and basic plant reproduction.	Fertilisation, gestation, and seed dispersal basics.
		IC 8	Prepare slides, record images digitally, and explain diffusion and osmosis.	Processes of diffusion, osmosis, and active transport.	Measure forces using sensors and relate data to movement and exercise.	Force, friction, and their effect on movement.	Carry out food tests safely and present results using digital tools.	Role of enzymes and absorption in digestion.	Compare respiration and photosynthesis and investigate respiration rates using simulations.	Energy transfer in respiration and photosynthesis.	Explain maternal lifestyle effects and compare sexual and asexual reproduction.	Development stages and ethical considerations.
			Ecosystems									
			Skill (Students can…)	**Knowledge**								
		IC 7	Construct simple food chains and explain interdependence.	Producers, consumers, and basic ecosystem relationships.								
		IC 8	Collect and analyse field data using digital sensors and explain human impacts.	Sustainability issues and conservation strategies.								

Chemistry	Students can describe the particle model and its applications, explain the properties and behaviour of materials, understand chemical reactions and conservation of mass, and evaluate the role of chemistry in everyday life and sustainability.		**Particles and States of Matter**		**Atoms, Elements and Compounds**		**Mixtures and Separation**		**Periodic Table and Materials**		**Chemical Reactions**	
			Skill (Students can…)	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**
		IC7	Use the particle model to explain states of matter and changes of state.	Properties of solids, liquids, and gases; particle arrangement.	Distinguish between elements, compounds, and mixtures and write word equations.	Basic atomic structure and chemical symbols.	Carry out simple separation methods and record results.	Filtration, evaporation, and chromatography basics.	Identify metals and non-metals and describe simple trends.	Group and period organisation; basic properties.	Classify common reactions and describe acids, alkalis, and indicators.	pH scale and neutralisation.
		IC 8	Measure changes of state using digital probes and interpret heating/cooling curves.	Gas pressure and particle behaviour.	Use balanced symbol equations and apply conservation of mass.	Chemical formulae and reaction principles.	Judge purity using melting/boiling point data and explain chromatography results.	Properties of pure substances and mixtures.	Explain reactivity trends and compare properties of polymers and composites.	Material properties and sustainability issues.	Investigate energetics using digital probes and explain exothermic/endothermic processes.	Energy changes in reactions and real-world applications.
Physics	Students can explore and explain motion, forces, energy, waves, electricity, and space, apply mathematical and graphical representations to analyse physical phenomena, and relate scientific principles to technological and societal contexts.		**Motion and Forces**		**Energy**		**Waves and Light**		**Sound**		**Electricity and Magnetism**	
			Skill (Students can…)	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**	**Skill (Students can…)**	**Knowledge**
		IC7	Measure distance and time, calculate speed, and describe balanced/unbalanced forces.	Speed formula and basic force concepts.	Recognize common energy changes and describe energy transfers.	Energy stores and pathways.	Describe basic properties of light and shadows.	Reflection and refraction basics.	Describe sound as vibrations and explain pitch and loudness qualitatively.	Wave properties of sound.	Build simple circuits and measure current and voltage.	Circuit components and basic electrical concepts.
		IC 8	Interpret distance-time graphs, apply Hooke's law, and calculate moments.	Force-extension relationships and levers.	Calculate work done and power and analyse energy consumption using spreadsheets.	Work and power formulas; sustainability of energy sources.	Investigate wave properties using digital tools and apply ray diagrams.	Wave equations and technological applications.	Measure frequency and amplitude using digital probes and link to wave properties.	Relationship between pitch, loudness, and wave features.	Apply Ohm's law, use circuit symbols, and test electromagnets.	Voltage-current-resistance relationships and magnetic fields.
			Earth and Space									
			Skill (Students can…)	**Knowledge**								
		IC7	Describe day/night and Moon phases.	Basic Earth-Sun-Moon relationships.								
		IC 8	Explain planetary orbits and evaluate evidence for solar system models.	Gravity and historical models of the solar system.								