basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

2025 ATP: NATURAL SCIENCES: GRADE 9 (TERM 1)

TERM 1	WEEK 1 15/01 - 17/01	WEEK 2 20/01 - 24/01	WEEK 3 27/01 - 31/01	WEEK 4 03/02 - 07/02	WEEK 5 10/02 - 14/02	WEEK 6 17/02 - 21/02	WEEK 7 24/02 - 28/02	WEEK 8 03/03 - 07/03	WEEK 9 10/03 - 14/03	WEEK 10 17/03 – 21/03	WEEK 11 24/03 – 28/03
Date completed											
CAPS TOPIC	**LIFE AND LIVING**										
	Cells as basic units of life		**Overview of Systems in the Human Body**	**Systems in the Human Body: Circulatory and Respiratory System**		**Human Reproduction System**		**Digestive System**		**Remediation, Revision and Consolidation**	
	• Cell structure • Differences between plant and animal cells • Draw and label a generalised plant and animal cell Cells in tissues, organs and systems		• **Nervous** • **Muscular-skeletal** • **Excretory systems** Only the overview & purpose for the above systems	Details: Overview, purpose, components, processes & health issues • Breathing, gaseous exchange, circulation, and respiration • Label the respiratory system		Details: Overview, purpose, components, processes & health issues • Purpose and puberty • Reproductive organs • Stages of reproduction • Label the reproduction system		Details: Overview, purpose, components, processes & health issues • Healthy diet • The alimentary canal and digestion • Label the digestive system			
CORE CONCEPTS, SKILLS AND VALUES	• Cell structure • Differences between plant and animal cells • Draw and label a generalised plant and animal cell • Cells in tissues, organs and systems		Overview 1. List & purpose of identified systems •Nervous • Muscular-skeletal • Excretory	Overview **AND** detail 1. Purpose 2. Components 3. Processes 4. Health issues • **Circulatory and respiratory systems** • Breathing, gaseous exchange, circulation, and respiration • Label the respiratory system		**Human reproduction** • Purpose and puberty • Reproductive organs • Stages of reproduction • Label the reproduction system		**Digestive system** • Healthy diet • The alimentary canal and digestion • Label the digestive system			
REQUISITE PRE-KNOWLEDGE	Grade 4: Living things		Grade 5: Animal skeletons Grade 5: Life cycles Grade 7: Human reproduction	Grade 4: Living things Grade 8: Respiration		Grade 7: Human reproduction and puberty		Grade 6: Nutrition & nutrients in food			
RESOURCES (OTHER THAN TEXTBOOK) TO ENHANCE LEARNING	• Video players, laptops, tablets, smart phones, posters and models • **Lab equipment**: Basic light microscope(s) scalpels or knives, dissecting needles, forceps, microscope slides, coverslips, droppers, Petri dishes • **Perishables:** Onions, tissue paper or filter paper, distilled water, iodine solution • 3-Dimensional (3D) model of a cell, and/or pictures • Micrographs of plant and animal cells		• Models or charts of the reproductive system • Video players, laptops/smart phones or tablets, data bundle	• Sheep/pig heart and lungs • Stopwatch/cell phone (for timing) • Posters and models or charts of torso, heart, kidney, digestive system, lungs, etc. • Video players, laptops/smartphones or tablets, data bundle		• Posters and models or charts of torso and reproductive organs		• Pictures of eating disorders • Video clips • Samples of food • Iodine solution • White paper • Ethanol or pure alcohol		

INFORMAL ASSESSMENT	• Research and write about the history of the discovery of the light and electron microscopes • Tabulate the differences between plant and animal cells • Prepare and examine slides of plant and animal cells such as onion cells, cheek cells • Draw and label a few cells from each observation	• Draw a large outline of the human body, add and label each system • Research and writing about the health issues related to each system	• Measure and compare heart rates before and after exercise. Draw a bar graph of the results. Make deductions of the findings • Draw flow charts to show the sequence of the stages from inhaling oxygen to respiration, to exhaling carbon dioxide • Research and write about one of the causes of health issues (such as smoking, drinking alcohol, high cholesterol levels) associated with the circulatory and respiratory systems	• Label diagrams and explain processes involved in human reproductive system • Draw a flow chart to show the sequence of the stages in human reproduction • Research and writing about the effects of alcohol, smoking and drug abuse on the fetus [*Relate this to the role of the placenta*] • Debate and discuss issues such as abortion, infertility, surrogacy, contraception, population control	• Compare balanced diets from different cultures such as kosher/halaal and nonkosher/non-halaal food • Investigate to test for the presence of starch and grease (fats and oils) in food • Discuss a variety of unhealthy dietary components such as additives, and the harmful effects of some diets such as eating too much fast food and diets developed for weight loss	
SBA (FORMAL ASSESSMENT)	• Practical task/investigation • Test					

2025 **TERM 2**	**WEEK 1** **08/04 - 11/04**	**WEEK 2** **14/04 - 18/04**	**WEEK 3** **21/04 - 25/04**	**WEEK 4** **05/05 - 09/05**	**WEEK 5** **12/05 - 16/05**	**WEEK 6** **19/05 - 23/05**	**WEEK 7** **26/05 - 30/05**	**WEEK 8** **02/06 - 06/06**	**WEEK 9** **09/06 - 13/06**	**WEEK 10** **16/06 – 20/06**	**WEEK 11** **23/06 - 27/06**
Date completed											
CAPS TOPIC	**MATTER AND MATERIALS**										
	Compounds	**Chemical Reactions**	**Chemical Reactions**	**Reaction of Metals with Oxygen**	**Reactions of Non-Metals with Oxygen**		**Acids & Bases, and Ph Value**	**Reactions of Acids with Bases: Part I**	**Reactions of Acids with Bases: Part Ii**	**Remediation, Revision and Consolidation**	
CORE CONCEPTS, SKILLS AND VALUES	• The Periodic Table • Names of compounds	• Reactants and products	• Chemical equations to represent reactions • Balanced equations	• The general reaction of metals with oxygen • Reaction of iron with oxygen • Reaction of magnesium with oxygen • Formation of rust • Ways to prevent rusting	• The general reaction of non-metals with oxygen • Reaction of carbon with oxygen • Reaction of sulfur with oxygen		• The concept of pH value	• Neutralisation and pH	• The general reaction of an acid with a metal oxide (base) • Applications		
REQUISITE PRE-KNOWLEDGE	• Grade 7: Introduction to the Periodic Table of elements • Grade 8: Atoms		• Grade 6: Mixtures • Grade 8: Atoms; Particle model of matter, - Chemical reactions - Basic mathematical operations	• Chemical reactions • Basic mathematical operations	• Grade 7: Introduction to the Periodic Table of elements • Grade 7: Acids, bases, and neutrals • Grade 8: Atoms • Grade 9: Compounds; Chemical reactions						
RESOURCES (OTHER THAN TEXTBOOK) TO ENHANCE LEARNING	• Posters, e.g. the Periodic Table, video players, laptops/tablets/smart phones • **Laboratory equipment and materials:** Heat source (such as Bunsen burner or spirit lamp), matches, safety goggles, tongs/pliers, test tubes, test tube racks, glass containers, beakers/glass jars, evaporating tins, dropper, clamp, retort stand, iron filings, wireless carbon dioxide gas sensor, wireless temperature sensor, wireless pressure sensor, pH sensor • **Chemicals and materials:** Universal indicator, bromothymol blue or phenolphthalein, magnesium ribbon, magnesium oxide powder, sodium hydroxide, hydrochloric acid, steel wool, dish • **Perishables** and/or **household substances**: Vinegar, tartaric acid, lemon, soap, bicarbonate of soda, liquid soap, tea, rooibos, coffee, milk, fruit juices, fizzy drinks, plastic beads, beans, plasticine or playdough, red cabbage, red onion, turmeric										

INFORMAL ASSESSMENT	• Distinguish between pure substances and mixtures • Distinguish between elements and compounds • Identify the relevant elements, mentioned in the reactions studied, on the Periodic Table of elements • Make models of compounds using beads, beans, or plasticine or playdough. • Write the names and the formulae (chemical symbols) of ALL the substances for every studied reaction. Write their balanced equations • Describe the neutralisation of an acid with a base using pH • Investigating a selection of household substances (such as water, tea and rooibos, coffee, milk, fruit juices, vinegar, tartaric acid, washing powder, bicarbonate of soda, salt water) to test whether they are acids, bases or neutrals using universal indicator and at least one other indicator (such as red cabbage water, red onion water, turmeric water, bromothymol blue, phenolphthalein). Record results (colour change) on a table and draw conclusions (acid, base or neutral) • Informal practical task/investigation based on teacher demonstrations • Informal test	
SBA (FORMAL ASSESSMENT)	• Practical Task/investigation • Test	

2025 ATP: NATURAL SCIENCES: GRADE9 (TERM 3)

TERM 3	WEEK 1 22/07 - 25/07	WEEK 2 28/07 - 01/08	WEEK 3 04/08 - 08/08	WEEK 4 11/08 - 15/08	WEEK 5 18/08 - 22/08	WEEK 6 25/08 - 29/08	WEEK 7 01/09 - 05/09	WEEK 8 08/09 -12/09	WEEK 9 15/09 - 19/09	WEEK 10 22/09 - 26/09	WEEK 11 29/09 - 03/10
Date completed											
STRAND	**ENERGY AND CHANGE**										
CAPS TOPIC	**Forces**		**Electric Cells as Energy Systems**	**Resistance**	**Series and Parallel Circuits**		**Safety with Electricity**	**Energy and The National Electricity Grid**	**Cost of Electrical Power**	**Remediation, Revision and Consolidation**	
Date completed											
CORE CONCEPTS, SKILLS AND VALUES	• Types of forces • Contact forces • Field forces (non-contact forces)		• Electric cells	• Uses of resistors • Factors that affect resistance in a circuit	• Series circuits • Parallel circuits		• Safety practices	• Electricity generation • Nuclear power in South Africa • National electricity grid	• The cost of power consumption		
REQUISITE PRE-KNOWLEDGE	• Grade 5: Energy and movement • Grade 7: Gravity • Grade. 8: Static electricity • Grade. 8: Energy transfer in electrical systems		• Grade 5 & 6: Electric cells, Gr 7: The national electricity supply system • Grade 6: Mains electricity • Grade 7: Potential and kinetic energy; Conservation of energy within a system • Grade 8: Transfer of energy within electrical systems								
RESOURCES (OTHER THAN TEXTBOOK) TO ENHANCE LEARNING	• **Laboratory equipment:** Wireless light sensor, and wireless temperature sensor, wireless pressure sensor, wireless voltage and current sensors, bar magnets, metal paper clips, spring balance, triple beam balance or electronic scale, iron, aluminium, steel, glass rod, PVC rod, plastic ruler, curved watch glasses, Perspex rods, Van de Graaff generator • **Materials**: Wooden or metal blocks (sponge or piece of foam, balls of the same volume, different masses (one set per pair), wooden blocks with different known masses or mass pieces, wooden block with a hook, calculator, hammer, feathers, two balls of the same mass, different volumes (one set per pair) • **Perishables:** Balloons, putty or play dough, graph paper, plastic, piece of knitted fabric (wool), cloth (wool or nylon) • Video players, laptops/tablets/smart phones		• **Laboratory equipment:** Wireless light sensor, wireless temperature sensor, wireless pressure sensor, wireless voltage and current sensors, ammeters, 250 ml beakers, copper electrode, zinc electrode, crocodile clips,• **Materials:** Zinc strips, nails,, copper strips or coins, LED bulbs, insulated copper conducting wires, copper sulphate, zinc sulphate, sodium sulphate, a U tube (this can be made from a plastic tube which is bent) or filter paper soaked in the salt bridge solution, graphite rod or graphite pencil, torches, light bulbs, batteries (AA), 1,5 V cells, metre rulers • **Perishables:** Lemons (or potatoes), salt (sodium chloride), cotton wool • Video players, laptops/tablets/smart phones							

INFORMAL ASSESSMENT	• Explain and demonstrate the two broad groups of forces • Demonstrate and explain the similarities and differences between gravitational, magnetic and electrostatic forces • Make a table of the differences between mass and weight • Give the scientific explanation of how lightning occurs • Construct the circuit with the cell, the ammeter, 1 bulb and the switch in series. Draw a circuit diagram • Investigate the effect of the number of cells connected in series on current and potential difference. Write a hypothesis for this investigation. Record the readings on the ammeter and voltmeter in the table and draw a graph of the results. Draw conclusions and make deductions about the findings • Investigate the relationship between the potential difference across the battery and the potential difference across the resistors in a series circuit, how the length of a conductor affects the resistance, the current and potential difference in a circuit when adding cells in parallel,, the current strength when adding resistors in parallel circuits, the relationship between the potential difference across the battery and the potential difference across the resistors in a parallel circuit • Identify series and parallel circuits in electrical wiring in homes, cars and toys. Draw the plan for wiring a house. Draw series and parallel circuit diagrams • Identify fuses, circuit breakers, earthing and Earth leakage systems in real circuits, or on circuit diagrams • Measure voltages across resistors and the current through them accurately • Explain advantages and disadvantages for series and parallel circuits • Draw and interpret various circuit diagrams • Distinguish between series and parallel circuits in the wiring of the home, cars and toys and explain the differences • Describe the national energy supply grid and the impact of electricity generation on the environment • Practise how to connect 3-pin plugs
SBA (FORMAL ASSESSMENT)	• Project • Test

2025 ATP: NATURAL SCIENCES: GRADE 9 (TERM 4)

TERM 4	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10
Date completed										
CAPS TOPIC	**PLANET EARTH AND BEYOND**									
	The Earth as a System	**Lithosphere**		**Mining of Mineral Resources**		**Atmosphere**		**Birth, Life and Death of Star**	**Remediation, Revision and Consolidation**	
CORE CONCEPTS, SKILLS AND VALUES	• Spheres of the Earth	• Lithosphere • The rock cycle		• Extracting ores • Refining minerals • Mining in South Africa		• Atmosphere • Troposphere • Stratosphere • Mesosphere • Thermosphere The greenhouse effect		• The birth of a star • Life of a star • Death of a star		
REQUISITE PRE-KNOWLEDGE	• Grade 4: Planet Earth • The Earth and Sun	• Grade 5: Fossils • Grade 5: Sedimentary rocks		• Grade 7: Introduction to the Periodic Table of elements • Grade 8: Atoms & the relationship between the Earth and other planets in our Solar System • Grade 9: Compounds						
RESOURCES (OTHER THAN TEXTBOOK) **TO ENHANCE LEARNING**	• Laboratory equipment and materials, e.g. wireless light sensor, wireless temperature sensor, wireless CO_2 sensor Video players, laptops/tablets/smart phones									
INFORMAL ASSESSMENT	• Writing to explain the interaction between the sphere's lithosphere, hydrosphere, atmosphere, biosphere • Worksheet (translation task) on the lithosphere • Writing and make labelled drawings to explain the rock cycle • Making a model to show the greenhouse effect • Investigating and reporting on the impact of global warming • Reading about how metal is extracted from ore • Investigating/demonstrating how lead is its extracted from ore by heating lead oxide on a carbon block • Illustrating physical separation processes used in mining (hand sorting or sifting stones from sand) • Researching and writing about a mining activity in South Africa Sequencing, explaining and presenting an information poster on the birth, life and death of stars Informal practical task/investigation based on teacher demonstrations • Informal test									
SBA (FORMAL ASSESSMENT)	• Test									

SCIENCE PROCESS SKILLS

The teaching and learning of Natural Sciences involve the development of a range of process skills that may be used in everyday life, in the community and in the workplace. Learners also develop the ability to think objectively and use a variety of forms of reasoning while they use these skills. Learners can gain these skills in an environment that taps into their curiosity about the world, and that supports creativity, responsibility and growing confidence.

The following are the cognitive and practical process skills that learners will be able to develop in Natural Sciences:

1. *Accessing and recalling information* – being able to use a variety of sources to acquire information, and to remember relevant facts and key ideas, and to build a conceptual framework.
2. *Observing* – noting in detail objects, organisms and events.
3. *Comparing* – noting similarities and differences between things.
4. *Measuring* – using measuring instruments such as rulers, thermometers, clocks and syringes (for volume).
5. *Sorting and classifying* – applying criteria in order to sort items into a table, mind-map, key, list or other format.
6. *Identifying problems and issues* – being able to articulate the needs and wants of people in society.
7. *Raising questions* – being able to think of, and articulate relevant questions about problems, issues, and natural phenomena.
8. *Predicting* – stating, before an investigation, what you think the results will be for that particular investigation.
9. *Hypothesising* – putting forward a suggestion or possible explanation to account for certain facts. A hypothesis is used as a basis for further investigation which will prove or disprove the hypothesis.
10. *Planning investigations* – thinking through the method for an activity or investigation in advance. Identifying the need to make an investigation a fair test by keeping some things (variables) the same whilst other things will vary.
11. *Doing investigations* – this involves carrying out methods using appropriate apparatus and equipment, and collecting data by observing and comparing, measuring and estimating, sequencing, or sorting and classifying. Sometimes an investigation has to be repeated to verify the results.
12. *Recording information* – recording data from an investigation in a systematic way, including drawings, descriptions, tables and graphs.
13. *Interpreting information* – explaining what the results of an activity or investigation mean (this includes reading and understanding maps, tables, graphs). A Translation Task requires learners to make sense of information and convert the information into a different format e.g.

from information captured on a table into a graph format and or written format.

14. *Communicating* – using written, oral, visual, graphic and other forms of communication to make information available to other people.
15. *The Scientific Process* is a way of investigating things about the world. Scientists use this process to find out about the world and to solve problems. The steps that make up the scientific process are not necessarily in order (sequential), and may include: *Step 1*: Identify a problem and develop a question. What is it you want to find out?

    Step 2: Form a hypothesis. A hypothesis is your idea, answer, or prediction about what will happen and why.

    Step 3: Design an activity or experiment. Do something that will help you test your idea or prediction to see if you were right.

    Step 4: Observe/note changes/reactions (e.g. through measuring), and record your observations (e.g. onto a table). What were the results of your activity or experiment? Write about what happened.

    Step 5: Make inferences about the observations recorded in the tables, graphs, drawings, photographs. Make some conclusions. What did you find out? Do your results support your hypothesis? What did you learn from this investigation?