

SBA GUIDELINES

Practical work:

- Learners should do TWO experiments (ONE Chemistry, ONE Physics) for SBA.
- Term 1: Newton's 2nd law of motion.
- Term 3: Boyle's law.

2021 National Recovery ATP: Grade 11 Term 1: PHYSICAL SCIENCES

TERM 1 (45 days)	Week 1 27 - 29 Jan (3 days)	Week 2 1 - 5 Feb (5 days)	Week 3 8 - 12 Feb (5 days)	Week 4 15 - 19 Feb (5 days)	Week 5 22 - 26 Feb (5 days)	Week 6 1 - 5 March (5 days)	Week 7 8 - 12 March (5 days)	Week 8 15 - 19 March (5 days)	Week 9 22 - 26 March (4 days)	Week 10 29 - 31 March (3 days)
CAPS Topics	MECHANICS: Vectors in two dimensions (2 hrs)	MECHANICS: Vectors in two dimensions (4 hrs)	MECHANICS: Vectors in two dimensions (2 hrs) MECHANICS: Newton's laws (2 hrs)	MECHANICS: Newton's laws (4 hrs)	MECHANICS: Newton's laws (4 hrs)	MECHANICS: Newton's laws (4 hrs)	MECHANICS: Newton's laws (4 hrs)	MATTER & MATERIAL: Atomic combinations (4 hrs)	MATTER & MATERIAL: Atomic combinations (3 hrs)	CONTROL TEST (2 hrs)
Topics /Concepts, Skills and Values	<ul style="list-style-type: none"> Define a resultant. Determine the resultant of vectors (maximum four) on a Cartesian plane, using the component method. Sketch the vertical vector (R_y) and the horizontal vector (R_x) on a Cartesian plane. 	<ul style="list-style-type: none"> Calculate the magnitude of the resultant using the theorem of Pythagoras. Determine the direction of the resultant using simple trigonometric ratios. Determine the resultant (R) of two vectors graphically using either the tail-to-head or tail-to-tail method (parallelogram method) as well as by calculation (component method) for a maximum of four vectors in both 1-dimension and 2-dimensions. Explain the meaning of a closed vector diagram. 	<p>MECHANICS: Vectors in two dimensions</p> <ul style="list-style-type: none"> Resolve a vector R into its horizontal (R_x) and vertical (R_y) components using $R_x = R\cos\theta$ and $R_y = R\sin\theta$ where θ is the angle between r and the x axis. <p>Newton's laws</p> <ul style="list-style-type: none"> Define normal force, N. Define frictional force, f. Know that a frictional force: <ul style="list-style-type: none"> Is proportional to the normal force Is independent of the area of the surfaces that are in contact with each other. 	<ul style="list-style-type: none"> Define the static frictional force, f_s. Solve problems using $f_s^{\max} = \mu_s N$ Define the kinetic frictional force, f_k. Solve problems using $f_k = \mu_k N$ Draw force diagrams. Draw free-body diagrams. Resolve a two-dimensional force, e.g. the weight of an object on an inclined plane, into its parallel (F_{\parallel}) and perpendicular (F_{\perp}) components. Determine the resultant/net force of two or more forces. State Newton's first law of motion. Define inertia and state that the mass of an object is a quantitative measure of its inertia. Discuss why it is important to wear seatbelts using Newton's first law of motion. 	<ul style="list-style-type: none"> State Newton's second law of motion. In symbols: $F_{\text{net}} = ma$ Draw force diagrams and free-body diagrams for objects that are in equilibrium or accelerating. Apply Newton's second law of motion to a variety of equilibrium and non-equilibrium problems including: <ul style="list-style-type: none"> A single object: <ul style="list-style-type: none"> Moving in a horizontal plane with or without friction Moving on an inclined plane with or without friction Moving in the vertical plane (lifts, rockets, etc.) 	<ul style="list-style-type: none"> Apply Newton's second law of motion to a variety of equilibrium and non-equilibrium problems including: <ul style="list-style-type: none"> Two-body systems (joined by a light inextensible string): <ul style="list-style-type: none"> Both on a flat horizontal plane with or without friction One in a horizontal plane with or without friction, and a second hanging vertically from a string over a frictionless pulley Both on an inclined plane with or without friction Both hanging vertically from a string over a frictionless pulley 	<ul style="list-style-type: none"> State Newton's third law of motion. Identify Newton III force pairs (action-reaction pairs) and list the properties of the force pairs (action-reaction pairs). State Newton's law of universal gravitation. Solve problems using $F = G \frac{m_1 m_2}{d^2}$. Calculate acceleration due to gravity on Earth using $g = \frac{GM}{r_E^2}$, and on another planet using $g = \frac{GM_P}{r_P^2}$, where M_P is the mass of the planet and r_P is the radius of the planet. Explain the difference between the terms weight and mass. Calculate weight using the $w = mg$. Calculate the weight of an object on other planets with different values of gravitational acceleration. Explain the term weightlessness 	<ul style="list-style-type: none"> Define a chemical bond. Draw Lewis dot diagrams of elements. Determine the number of valence electrons in an atom. Explain, in terms of electrostatic forces and in terms of energy, why: <ul style="list-style-type: none"> Two H atoms form an H_2 molecule He does not form He_2 Interpret the graph of potential energy versus the distance between nuclei for two approaching hydrogen atoms. Define: a covalent bond, a molecule Draw Lewis diagrams for simple molecules, e.g. H_2, F_2, H_2O, NH_3, CH_4, HF, OF_2, $HOCl$ and molecules with multiple bonds, e.g. N_2, O_2 and HCN. Discuss molecular shapes of H_2 (linear) H_2O (angular), NH_3 (pyramidal), CO_2 (linear), CH_4 (tetrahedral). Describe rules for bond formation. Define a bonding pair and a lone pair. Describe the formation of the dative covalent bond. 	<ul style="list-style-type: none"> Define electro-negativity. Describe, with an example, a non-polar covalent bond. Describe, with an example, a polar covalent bond. Show polarity of bonds using partial charges, e.g. $H^{\delta+} Cl^{\delta-}$. Compare the polarity of chemical bonds using a table of electronegativities. Explain that the character of a bond varies from non-polar covalent ($\Delta EN = 0$) to polar covalent ($0 < \Delta EN \leq 1,7$) to ionic ($\Delta EN > 1,7$). Use difference in electronegativity and molecular shape to explain that polar bonds do not always lead to polar molecules. Define bond energy and bond length. Explain the relationship between bond energy and bond length. Explain the relationship between the strength of a chemical bond and bond length, size of bonded atoms and number of bonds. 	<p>ONE PAPER (100 marks)</p> <ul style="list-style-type: none"> Vectors in two dimensions Newton's laws Atomic combinations

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CAPS Topics		MECHANICS: Vectors in two dimensions (2 hrs)	MECHANICS: Vectors in two dimensions (4 hrs)	MECHANICS: Vectors in two dimensions (2 hrs) MECHANICS: Newton's laws (2 hrs)	MECHANICS: Newton's laws (4 hrs)	MECHANICS: Newton's laws (4 hrs)	MECHANICS: Newton's laws (4 hrs)	MECHANICS: Newton's laws (4 hrs)	MATTER & MATERIAL: Atomic combinations (4 hrs)	MATTER & MATERIAL: Atomic combinations (3 hrs)	CONTROL TEST (2 hrs)
Requisite pre-knowledge		<ul style="list-style-type: none"> Vectors and scalars Representation of vectors 	<ul style="list-style-type: none"> Vectors and scalars Force and unit of force 	<ul style="list-style-type: none"> Vectors and scalars 	<ul style="list-style-type: none"> Equations of motion Force and free-body diagrams Frictional forces 	<ul style="list-style-type: none"> Equations of motion Force and free-body diagrams Frictional forces 	<ul style="list-style-type: none"> Equations of motion Force and free-body diagrams Gravitational acceleration 	<ul style="list-style-type: none"> Chemical bonding Electron configuration Writing of formulae 	<ul style="list-style-type: none"> Chemical bonding Writing of formulae Valency Periodic Table 	<ul style="list-style-type: none"> Chemical bonding Molecules Periodic Table 	N/A
Resources (other than textbook) to enhance learning		<ul style="list-style-type: none"> Apparatus for experiment below Study guides Previous question papers Mindset & YouTube videos 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos Simulations 	<ul style="list-style-type: none"> Apparatus for experiment below Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Apparatus for experiment below Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos Simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos Simulations 	N/A
Assessment	Informal Assessment: Remediation	<ul style="list-style-type: none"> Practical: Determine the resultant of three non-linear force vectors Homework 	<ul style="list-style-type: none"> Homework Informal test 	<ul style="list-style-type: none"> Homework 	<ul style="list-style-type: none"> Practical: The effect of different surfaces on the maximum static frictional force Homework 	<ul style="list-style-type: none"> Homework 	<ul style="list-style-type: none"> Homework 	<ul style="list-style-type: none"> Homework Informal test 	<ul style="list-style-type: none"> Homework 	<ul style="list-style-type: none"> Homework Informal test 	N/A
	SBA (Formal)	None	None	None	None	Formal practical: Newton's second law of motion	None	None	None	None	None

2021 National Recovery ATP: Grade 11 – Term 2: **PHYSICAL SCIENCES**

TERM 2 (51 days)	Week 1 13 – 16 April (4 days)	Week 2 19 – 23 April (5 days)	Week 3 28 – 30 April (3 days)	Week 4 3 – 7 May (5 days)	Week 5 10 -14 May (5 days)	Week 6 17 - 21 May (5 days)	Week 7 24 - 28 May (5 days)	Week 8 31 May – 4 June (5 days)	Week 9 7 – 11 June (5 days)	Week 10 14 – 18 June (4 days)	Week 11 21 – 25 June (5 days)
CAPS Topics	MARCH CONTROL TEST: Discussion (3 hrs)	MATTER & MATERIAL: Intermolecular forces (4 hrs)	MATTER & MATERIAL: Intermolecular forces (2 hrs)	CHEMICAL CHANGE: Quantitative aspects of chemical change (4 hrs)	CHEMICAL CHANGE: Quantitative aspects of chemical change (4 hrs)	CHEMICAL CHANGE: Quantitative aspects of chemical change (4 hrs)	CHEMICAL CHANGE: Quantitative aspects of chemical change (4 hrs)	ELECTRICITY & MAGNETISM: Electrostatics (4 hrs)	ELECTRICITY & MAGNETISM: Electrostatics (4 hrs)	ELECTRICITY & MAGNETISM: Electrostatics (3 hrs)	Control Test (2 hrs)
Topics / Concepts, Skills and Values	<ul style="list-style-type: none"> Discussion and corrections of March Control Test 	<ul style="list-style-type: none"> Describe the difference between intermolecular forces and interatomic forces (intramolecular forces) using a diagram of a group of small molecules & in words. Name and explain the different intermolecular forces (Van der Waals forces): <ul style="list-style-type: none"> Mutually induced dipole forces or London forces: - Dipole-dipole forces Dipole-induced dipole forces: Hydrogen bonding: Ion-dipole forces: Forces between ions and polar molecules 	<ul style="list-style-type: none"> State the relationship between intermolecular forces and molecular mass. Explain the effect of intermolecular forces on boiling point, melting point, vapour pressure & solubility. 	<ul style="list-style-type: none"> Describe the mole as the SI unit for amount of substance. Define one mole. Describe Avogadro's number, N_A, as the number of particles (atoms, molecules, formula-units) present in one mole. Define molar mass. Calculate the molar mass of a substance given its formula. State Avogadro's Law. Know the molar gas volume, V_M, at STP is $22,4 \text{ dm}^3 \cdot \text{mol}^{-1}$. Do calculations using $n = \frac{m}{M}$ $n = \frac{V}{V_M}$, $n = \frac{\text{number of particles}}{N_A}$ 	<ul style="list-style-type: none"> Interpret balanced equations in terms of volume relationships for gases. Define concentration. Calculate concentration, in $\text{mol} \cdot \text{dm}^{-3}$, using $c = \frac{n}{V}$. Determine percentage composition of a compound. Determine the empirical formula and molecular formula of compounds. Do stoichiometric calculations including limiting reagents. 	<ul style="list-style-type: none"> Determine the percentage yield of a chemical reaction. Determine the percentage CaCO_3 in an impure sample of sea shells (purity or percentage composition). 	<ul style="list-style-type: none"> Stoichiometric calculations with explosions as reactions e.g. $2\text{NH}_4\text{NO}_3 \rightarrow 2\text{N}_2(\text{g}) + 4\text{H}_2\text{O}(\text{g}) + \text{O}_2(\text{g})$ $2\text{C}_8\text{H}_{18} + 25\text{O}_2 \rightarrow 16\text{CO}_2 + 18\text{H}_2\text{O}$ Stoichiometric calculations using reaction in airbags (sodium azide): $2\text{NaN}_3(\text{s}) \rightarrow 2\text{Na}(\text{s}) + 3\text{N}_2(\text{g})$ 	<ul style="list-style-type: none"> State Coulomb's law. Solve problems using $F = \frac{kQ_1Q_2}{r^2}$ for charges in one dimension (1D) – restrict to three charges. Solve problems using $F = \frac{kQ_1Q_2}{r^2}$ for charges in two dimensions (2D) – for three charges in a right-angled formation (limit to charges at the 'vertices of a right-angled triangle'). 	<ul style="list-style-type: none"> Describe an electric field as a region in space in which an electric charge experiences a force. Draw electric field patterns for the following configurations: <ul style="list-style-type: none"> A single point charge Two point charges (one negative, one positive OR both positive OR both negative) A charged sphere (Restrict to charges identical in magnitude.) Define the electric field at a point. ($E = \frac{F}{Q}$). Solve problems using the equation $E = \frac{F}{Q}$. 	<ul style="list-style-type: none"> Calculate the electric field at a point due to a number of point charges, using the equation $E = \frac{kQ}{r^2}$ to determine the contribution to the field due to each charge. Restrict to three charges in a straight line. 	ONE PAPER 100 marks <ul style="list-style-type: none"> Intermolecular forces Quantitative aspects of chemical change Electrostatics
Requisite pre-knowledge	<ul style="list-style-type: none"> Atoms and molecules 	<ul style="list-style-type: none"> Molecules Kinetic molecular theory and phases of matter 	<ul style="list-style-type: none"> Molecules Kinetic molecular theory and phases of matter 	<ul style="list-style-type: none"> Mole concept Molar mass, molar volume Concentration Writing of formulae 	<ul style="list-style-type: none"> Mole concept Molar mass, molar volume Concentration Writing of formulae and balanced equations 	<ul style="list-style-type: none"> Mole concept Molar mass, molar volume Concentration Writing of formulae and balanced equations 	<ul style="list-style-type: none"> Mole concept Molar mass, molar volume Concentration Writing of formulae and balanced equations 	<ul style="list-style-type: none"> Positive & negative charges Electrostatic forces Vectors and scalars 	<ul style="list-style-type: none"> Positive & negative charges Electrostatic forces Vectors and scalars 	<ul style="list-style-type: none"> Positive & negative charges Electric field Vectors and scalars 	N/A
Resources (other than textbook) to enhance learning	<ul style="list-style-type: none"> March question paper 	<ul style="list-style-type: none"> Molecular models Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos Simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos PhET simulations 	N/A

TERM 2 (51 days)	Week 1 13 – 16 April (4 days)	Week 2 19 – 23 April (5 days)	Week 3 28 – 30 April (3 days)	Week 4 3 – 7 May (5 days)	Week 5 10 -14 May (5 days)	Week 6 17 - 21 May (5 days)	Week 7 24 - 28 May (5 days)	Week 8 31 May – 4 June (5 days)	Week 9 7 – 11 June (5 days)	Week 10 14 – 18 June (4 days)	Week 11 21 – 25 June (5 days)
Informal Assessment: Remediation	<ul style="list-style-type: none"> • Corrections • Homework 	<ul style="list-style-type: none"> • Homework 	<ul style="list-style-type: none"> • Homework • Informal test 	<ul style="list-style-type: none"> • Homework 	<ul style="list-style-type: none"> • Practical: Preparation of a standard solution • Homework 	<ul style="list-style-type: none"> • Homework 	<ul style="list-style-type: none"> • Homework • Informal test 	<ul style="list-style-type: none"> • Homework 	Homework	Homework Informal test	N/A
SBA (Formal)	None	None	None	None	None	None	None	None	None	None	Control Test

2021 National Recovery ATP: Grade 11 – Term 3: **PHYSICAL SCIENCES**

TERM 3 (52 days)	Week 1 13 – 16 July (4 days)	Week 2 19 – 23 July (5 days)	Week 3 26 – 30 July (5 days)	Week 4 2 – 6 Aug (5 days)	Week 5 10 – 13 Aug (4 days)	Week 6 16 – 20 Aug (5 days)	Week 7 23 – 27 Aug (5 days)	Week 8 30 Aug – 3 Sept (5 days)	Week 9 6 - 10 Sept (5 days)	Week 10 13 - 17 Sept (5 days)	Week 11 20 - 23 Sept (4 days)
CAPS Topics	JUNE CONTROL TEST: Discussion (3 hrs)	ELECTRICITY & MAGNETISM: Electromagnetism (4 hrs)	ELECTRICITY & MAGNETISM: Electromagnetism (4 hrs)	ELECTRICITY & MAGNETISM: Electric circuits (4 hrs)	ELECTRICITY & MAGNETISM: Electric circuits (3 hrs)	ELECTRICITY & MAGNETISM: Electric circuits (4 hrs)	MATTER AND MATERIAL: Ideal gases and thermal properties (4 hrs)	MATTER AND MATERIAL: Ideal gases and thermal properties (4 hrs)	CHEMICAL CHANGE: Energy and chemical change (4 hrs)	CHEMICAL CHANGE: Types of reaction (4 hrs)	CONTROL TEST (2 hrs)
Topics /Concepts, Skills and Values	Discussion and corrections of the June control Test.	<ul style="list-style-type: none"> Magnetic field near a current carrying wire Use the Right Hand Rule to determine the direction of the magnetic field associated with: <ol style="list-style-type: none"> A straight current carrying wire A current carrying loop (single) of wire A solenoid Draw the magnetic field lines around: <ol style="list-style-type: none"> A straight current carrying wire A current carrying loop (single) of wire Solenoid Discuss qualitatively the environmental impact of overhead electrical cables. 	<ul style="list-style-type: none"> State Faraday's Law. Use words and pictures to describe what happens when a bar magnet is pushed into or pulled out of a solenoid connected to a galvanometer. Use the Right Hand Rule to determine the direction of the induced current in a solenoid when the north or south pole of a magnet is inserted or pulled out. 	<ul style="list-style-type: none"> State Ohm's law in words. Interpret data/graphs on the relationship between current, potential difference and resistance at constant temperature. State the difference between ohmic and non-ohmic conductors and give an example of each. Solve problems using $R = \frac{V}{I}$ for circuits containing resistors that are connected in series and/or in parallel (maximum four resistors). 	<ul style="list-style-type: none"> Define power. Solve problems using $P = \frac{W}{\Delta t}$. Recall that $W = VQ$ and by substituting $Q = I\Delta t$ and $V = IR$, the following are obtained: $W = VI\Delta t$, $W = I^2R\Delta t$, $W = \frac{V^2\Delta t}{R}$ Deduce, by substituting $P = \frac{W}{\Delta t}$ into above equations, the following equations: $P = VI$, $P = I^2R$ and $P = \frac{V^2}{R}$ Solve problems using $P = VI$, $P = I^2R$ and $P = \frac{V^2}{R}$. Solve circuit problems involving the concepts of power and electrical energy. 	<ul style="list-style-type: none"> Deduce that the kilowatt-hour (kWh) refers to the use of 1 kilowatt of electricity for 1 hour. Know that 1 kWh is an amount of electrical energy known as one unit of electricity. Calculate the cost of electricity usage given the power specifications of the appliances used, the duration and the cost of 1 kWh. 	<ul style="list-style-type: none"> Describe the motion of individual molecules i.e. <ul style="list-style-type: none"> collisions with each other and the walls of the container molecules in a sample of gas move at different speeds Explain the idea of 'average speeds' in the context of molecules of a gas. Describe an ideal gas in terms of the motion of molecules. Explain how a real gas differs from an ideal gas. State the conditions under which a real gas approaches ideal gas behaviour. 	<ul style="list-style-type: none"> Describe the relationship between volume and pressure for a fixed amount of gas at constant temperature (Boyle's law): <ul style="list-style-type: none"> Practically By interpreting table of results Using graphs Using symbols ('\propto') and the words 'inversely proportional' Writing a relevant equation Explain the temperature of a gas in terms of the average kinetic energy of the molecules of the gas Explain the pressure exerted by a gas in terms of the collision of the molecules with the walls of the container 	<ul style="list-style-type: none"> Define heat of reaction (ΔH). Define an exothermic reaction. Define and endothermic reaction. Classify, with reason, reactions as exothermic or endothermic. State the sign of ΔH for exothermic and endothermic reactions. Define activation energy. Define an activated complex. Draw or interpret fully labelled sketch graphs (potential energy versus course of reaction graphs) of catalysed and uncatalysed endothermic and exothermic reactions. 	<ul style="list-style-type: none"> Write names and formulae of common acids: hydrochloric acid, nitric acid, sulphuric acid and ethanoic acid (acetic acid). Write names and formulae of common bases: ammonia, sodium carbonate (washing soda), sodium hydrogen carbonate, sodium hydroxide (caustic soda) and potassium hydroxide Define acids and bases according to the Arrhenius & Bronsted-Lowrey theories. Identify conjugate acid-base pairs for given compounds. Describe the term amphiprotic or ampholyte. Write equations to show how an amphiprotic substance can act as acid or base. Write reaction equations for the dissolution of acids and bases in water. Write the overall equations for the reactions of acids with metal hydroxides and metal oxides and metal carbonates. 	ONE PAPER (100 marks)
Requisite pre-knowledge	N/A	<ul style="list-style-type: none"> Positive & negative charges 	<ul style="list-style-type: none"> Magnetic field Current, potential difference 	<ul style="list-style-type: none"> Magnetic fields around current-carrying conductors 	<ul style="list-style-type: none"> Current, potential difference, 	<ul style="list-style-type: none"> Current, potential difference, 	<ul style="list-style-type: none"> Molecules Kinetic molecular theory 	<ul style="list-style-type: none"> Molecules Kinetic molecular theory and phases of matter 	<ul style="list-style-type: none"> Exothermic and endothermic reactions 	<ul style="list-style-type: none"> Writing of formulae and balanced equations 	N/A

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CAPS Topics		JUNE CONTROL TEST: Discussion (3 hrs)	ELECTRICITY & MAGNETISM: Electromagnetism (4 hrs)	ELECTRICITY & MAGNETISM: Electromagnetism (4 hrs)	ELECTRICITY & MAGNETISM: Electric circuits (4 hrs)	ELECTRICITY & MAGNETISM: Electric circuits (3 hrs)	ELECTRICITY & MAGNETISM: Electric circuits (4 hrs)	ELECTRICITY & MAGNETISM: Electric circuits (4 hrs)	MATTER AND MATERIAL: Ideal gases and thermal properties (4 hrs)	MATTER AND MATERIAL: Ideal gases and thermal properties (4 hrs)	CHEMICAL CHANGE: Energy and chemical change (4 hrs)	CHEMICAL CHANGE: Types of reaction (4 hrs)	CONTROL TEST (2 hrs)
			<ul style="list-style-type: none"> Electrostatic force Electric field Vectors and scalars 		<ul style="list-style-type: none"> Current, potential difference, resistance 	<ul style="list-style-type: none"> resistance, power Electric circuits 	<ul style="list-style-type: none"> resistance, power Electric circuits 	<ul style="list-style-type: none"> and phases of matter 		<ul style="list-style-type: none"> Exo- and endothermic reactions Writing formulae 			
Resources (other than textbook) to enhance learning		<ul style="list-style-type: none"> June control test question paper 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Apparatus for experiment listed below Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Apparatus for experiment listed below Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Study guides Previous question papers Mindset & YouTube videos Simulations 	<ul style="list-style-type: none"> Apparatus: Boyle's law Study guides Previous question papers Mindset & YouTube videos phet simulations 	<ul style="list-style-type: none"> Study guides Previous question papers; Mindset & YouTube videos Simulations 	<ul style="list-style-type: none"> Study guides Previous question papers; Mindset & YouTube videos Simulations 	N/A	
Assessment	Informal Assessment: Remediation	<ul style="list-style-type: none"> Homework Corrections 	<ul style="list-style-type: none"> Homework Informal test 	<ul style="list-style-type: none"> Practical: magnetic fields around current-carrying conductors Homework 	<ul style="list-style-type: none"> Practical: Induced current in a coil by moving a magnet in and out of the coil (demo) Homework Informal test 	<ul style="list-style-type: none"> Homework 	<ul style="list-style-type: none"> Homework Practical: Ohm's law 	<ul style="list-style-type: none"> Homework 	<ul style="list-style-type: none"> Homework Informal test 	<ul style="list-style-type: none"> Homework 	<ul style="list-style-type: none"> Homework 	N/A	
	SBA (Formal)	None	None	None	None	None	None	None	None	Formal practical: Boyle's law	None	None	Control test

2021 National Recovery ATP: Grade 11 – Term 4: **PHYSICAL SCIENCES**

TERM 4 (47 days)		Week 1 5 – 8 Oct (4 days)	Week 2 11 – 15 Oct (5 days)	Week 3 18 – 22 Oct (5 days)	Week 4 25 – 29 Oct (5 days)	Week 5 1 – 5 Nov (5 days)	Week 6 8 – 12 Nov (5 days)	Week 7 15 – 19 Nov (5 days)	Week 8 -10 22 Nov – 8 Dec (13 days)
CAPS Topics		SEPTEMBER CONTROL TEST: Discussion (2 hrs) CHEMICAL CHANGE: Types of reaction (1 hr)	CHEMICAL CHANGE: Types of reaction (4 hrs)	CHEMICAL CHANGE: Types of reaction (4 hrs)	CONSOLIDATION AND REVISION (4 hrs)	CONSOLIDATION AND REVISION (4 hrs)	CONSOLIDATION AND REVISION (4 hrs)	CONSOLIDATION AND REVISION (4 hrs)	FINAL EXAMINATION P1: 2 hrs P2: 2 hrs
Topics /Concepts, Skills and Values		<ul style="list-style-type: none"> Discussion and corrections of control test Acid-base reactions <ul style="list-style-type: none"> Describe an acid-base indicator as a weak acid, or a weak base, which colour changes as the H⁺ ion or the OH⁻ ion concentration in a solution changes. Know the colours of litmus, methyl orange, phenolphthalein and bromothymol blue in acids and in bases. 	Acid-base reactions <ul style="list-style-type: none"> Identify the acid and the base needed to prepare a given salt and write an equation for the reaction. Write down neutralisation reactions of common laboratory acids and bases. Redox reactions <ul style="list-style-type: none"> Explain the meaning of oxidation number. Assign oxidation numbers to atoms in various ions and molecules, e.g. H₂O, CH₄, CO₂, H₂O₂, and HOCℓ by using oxidation number guidelines or rules. 	Redox reactions <ul style="list-style-type: none"> Describe a redox (oxidation-reduction) reaction as involving an electron transfer. Describe a redox (oxidation-reduction) reaction as always involving changes in oxidation numbers. Identify a redox reaction and apply the correct terminology to describe all the processes i.e. oxidation, reduction, reducing agent, oxidising agent Balance redox reactions by using half-reactions from the Table of Standard Reduction Potentials 	<ul style="list-style-type: none"> All topics 	All topics	All topics	All topics	Physics Paper 1 (100 marks) <ul style="list-style-type: none"> Vectors in two dimensions Newton's laws Electrostatics Electromagnetism Electric circuits Chemistry Paper 2 (100 marks) <ul style="list-style-type: none"> Atomic combinations Intermolecular forces Ideal gases and thermal properties Quantitative aspects of chemical change Energy and chemical change Types of reaction
Requisite pre-knowledge		Acid and base properties	Writing of formulae and balanced equations	Writing of formulae and balanced equations	N/A	N/A	N/A	N/A	N/A
Resources (other than textbook) to enhance learning		<ul style="list-style-type: none"> September control test question paper Acid-base indicators 	<ul style="list-style-type: none"> Apparatus for practical below. Study guides Previous question papers; Mindset & YouTube videos Simulations 	<ul style="list-style-type: none"> Table of Standard Reduction potentials Study guides Previous question papers; Mindset & YouTube videos Simulations 	<ul style="list-style-type: none"> Study guides Previous question papers; Mindset & YouTube videos Simulations 	<ul style="list-style-type: none"> Study guides Previous question papers; Mindset & YouTube videos Simulations 	<ul style="list-style-type: none"> Study guides Previous question papers; Mindset & YouTube videos PhET simulations 	<ul style="list-style-type: none"> Study guides Previous question papers; Mindset & YouTube videos PhET simulations 	N/A
Assessment	Informal Assessment: Remediation	<ul style="list-style-type: none"> Homework 	<ul style="list-style-type: none"> Practical: Acid-base titration Homework 	<ul style="list-style-type: none"> Homework Informal test 	<ul style="list-style-type: none"> Homework Informal test 	<ul style="list-style-type: none"> Informal test Homework 	<ul style="list-style-type: none"> Informal test Homework 	<ul style="list-style-type: none"> Informal test Homework 	N/A
	SBA (Formal)	None	None	None	None	None	None	None	None