MINISTRY OF EDUCATION

NATIONAL CENTRE FOR EDUCATIONAL RESOURCE DEVELOPMENT

NATIONAL SCHEME FOR SECONDARY SCHOOLS

GRADE 11

INTEGRATED SCIENCE



NATIONAL SCHEMES FOR SECONDARY SCHOOLS

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NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 1
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Electricity and lighting	Students will: Appreciate the use of good and poor conductors of electricity.	Definition of conductors (good, semi and poor). (i) definition of insulators. (ii) use of insulators (poor conductors such as rubber and plastics in covering electrical wires and connections). Examine the flow of electricity in circuits. Circuits: (i) electrical components of circuits and their symbols (ammeter, cell, lamps, resistors, switch, transformer, voltmeter, and fuse) (ii) difference series and parallel circuits (iii) simple circuits (must be able to draw simple circuits). Relationship between voltage (v), current (i) and resistance (r):	Defining the terms conductors (good, semi and poor), and insulators using simple circuits and materials around the lab. Identifying the uses of poor conductors such as rubber and plastics in covering electrical wires and connections. Observing the flow of electricity in a circuit using phet simulation/ a circuit. Identifying electrical components and their symbols using phet simulations/ a circuit (ammeter, cell, lamps, resistors, switch, transformer, voltmeter, and fuse). Differentiating between a series and parallel circuit using circuits or phet simulations.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 273-281 Simple circuit, materials to test for electrical conductivity. Chart with circuit symbols. Calculators Past CSEC Integrated Science questions on the use of the formula V = IR and P=IV	Oral Questioning 1. Distinguish between electrical conductors and electrical insulators. Written Assessment Answers to Ohm's law calculations. Assessing the model of the series and parallel circuits.

		(i) units of electricity: ampere, volt, watt, and ohm. (ii) calculation of: - wattage power (P), given voltage and current, use of formula $P = IV$. - voltage given current and resistance, use of formula $V = IR$ (for series circuit only).	Drawing simple circuit diagrams. Using simulation to explain the relationship between voltage, current and resistance. Matching the definition, unit, symbol of voltage, current and resistance. Using formula P= IV to calculate for power. Explaining the use of the formula V=IR. Using formula V=IR to calculate the voltage, current or resistance for series circuit only. Answering and discussing the solutions to past CSEC questions on Ohm's law.		
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video link	Video links on conductors and insulators, series, and parallel circuits, Ohm's law: https://www.youtube.com/watch?v=QrONohBedtk				

	https://www.youtube.com/watch?v=8Z0jhQeYDUE https://www.youtube.com/watch?v=E_8KI9I-QoU Phet simulation link on Ohm's Law and circuit building: https://phet.colorado.edu/sims/html/ohms-law/latest/ohms-law_all.html https://phet.colorado.edu/sims/html/circuit-construction-kit-ac-virtual-lab/latest/circuit-construction-kit-ac-virtual-lab_all.html

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 2
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Electricity and lighting	Students will: Know how to calculate the energy consumption of different appliances. Appreciate the need for energy conservation in the home after knowing how to calculate the electricity bill. Be aware of the importance of a fuse in an electrical circuit.	Consumption of electricity in the home (a) energy consumption = power x time. (b) the cost of using heating appliances (clothes iron, stoves) and non-heating appliances (radio, fluorescent bulbs, fans). Unit = 1 kwh. Costs contributing to electricity bills (meter rentals and fuel adjustments). Safety features of electrical devices Electrical devices: (i) fuse (ii) wiring plug and flex. (b) colour code in the wiring plug and choice of flex. (c) dangers of an overloading circuit (overheating of wire that may cause insulation to burn).	Performing calculations using energy consumption= power x time. Manipulating the formula energy consumption= power x time to find for power and time. Calculating the cost of using heating appliances (clothes iron, stoves) and non-heating appliances (radio, fluorescent bulbs, fans). Calculating the cost of electricity includes meter rentals and fuel adjustments. Discussing the use of safety features on electrical devices: the use of fuse and wiring plug and flex. Demonstrating how to wire the plug	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 281- 287 Calculators Past CSEC Integrated Science questions on electricity consumption in the home. Worksheet on reading electric meters.	Oral Questioning 1. What is the unit for energy consumption in the home? Written Assessment Answers to calculations on energy consumption, and electrical bills.

		Mention the use of thick wires as overhead cables and for heavy-duty appliances. Energy conservation measures. (a) definition of energy conservation. (b) energy wastage in faulty electrical appliances. Light emitting diode (led), liquid crystal display (lcd), plasma. Methods of energy conservation such as turning off lights, unplugging appliances not in use, and the use of occupancy sensors.	using a flex cable. Identifying the meaning of each colour in the flex cable. Discussing the dangers of overloading a circuit (overheating of wire that may cause insulation to burn). Mention the use of thick wires as overhead cables and for heavy-duty appliances. Defining the term energy conservation. Discussing the energy conservation measures. Discussing how faulty electrical appliances lead to energy wastage. Discussing the use of Light emitting diode (led), liquid crystal display (lcd), plasma and energy conservation. Answering and discussing the solutions to past CSEC questions on energy consumption in the home.		

Lab. # 11	Students conduct experiments and submit lab reports. *Note: This lab can be assessed as an SBA since students were exposed to marked lab reports for various skills.*				
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on how fuses work, wires, kWh, energy conservation in the home, and light bulbs: https://www.youtube.com/watch?v=IlPuioUs5N0 https://www.youtube.com/watch?v=0OKTejgaWTY https://www.youtube.com/watch?v=SMPhh8gT_1E https://www.youtube.com/watch?v=h4RmNNve3lc&t=2s https://www.youtube.com/watch?v=Pk60-D61h34				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 3
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Electricity and lighting	Students will: Know of energy conservation methods. Be aware of the efficiency of different types of lamps. Understand the importance of first aid in various scenarios.	Compare artificial sources of light. (a) artificial sources of light: (i) fluorescent tubes (ii) LED bulbs (iii) compact fluorescent bulbs (iv) filament lamps. (b) comparison of sources in (a) using: (i) shadow formation (ii) efficiency (iii) ease of brightness control (iv) similarity with daylight. First aid methods for treating electrical accidents. (a) description of methods to include principles of CPR. (b) methods in relation to: (i) electrical shock; and (ii) burns.	Lab activity: To observe lamps of different wattage. Observing the use of fluorescent tubes, LED, LCD, plasma, compact fluorescent bulbs, and filament lamps. Comparing the use of fluorescent tubes, LED, LCD, plasma, compact fluorescent bulbs, and filament lamps. Creating a first aid kit for the lab. Demonstrating the steps in CPR using a doll. Demonstrating how to use elements	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. 291-294 Circuit board with fluorescent tubes, LED, LCD, plasma, and filament lamps. Lab activity: lamps of different wattage, bulb socket, power source. Materials for first aid kit: kit, bandages, iodine solution, rubbing alcohol etc. Past CSEC Integrated	Oral Questioning 1. State THREE ways of reducing energy consumption in the home. 2. State the first aid steps necessary in dealing with a victim who: a. has a minor burn. b. has stopped breathing. Written Assessment Answers to past CSEC questions on light bulbs and first aid. Assessing First aid kits.

		Hazards associated with electricity. (a) hazards associated with powerlines include: (i) illegal connections (ii) kite flying (iii) picking of fruits. (b) mishandling appliances to include: (i) radios (ii) television sets (iii) computers (iv) microwaves.	of the first aid kit for various accidents and emergencies (electrical shock, burns). Discussing the hazards associated with electricity (illegal connections, kite flying, picking of fruits). Discussing the hazards associated with mishandling of appliances (radios, TV, computers, and microwaves). Answering and discussing the solutions to past CSEC questions on light bulbs and first aid.	Science questions on light bulbs and first aid.	
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on light bulbs, first aid kit, CPR: https://www.youtube.com/watch?v=Pk60-D61h34 https://www.youtube.com/watch?v=gn6xt1ca8A0 https://www.youtube.com/watch?v=-NodDRTsV88				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 4
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Electricity and lighting	Students will: Know the type of fire extinguisher used in extinguishing fires. Be aware of the hazards associated with electricity, and chemicals. Appreciate the use of conventional protective gear/wear in various fields.	Methods of extinguishing fires. (a) elements required for fires (heat, fuel, oxygen). (b) types of fires: (i) electrical; (ii) chemical; and (iii) bush fires. (c) types of fire extinguishers: (i) water; (ii) foam; (iii) carbon dioxide; and (iv) powder. (d) methods of extinguishing fires: (i) removing heat; (ii) removing oxygen, and (iii) removing fuel source. Reference to hazards associated with electricity, chemicals are flammable, causing fires, and bushfires result in soil erosion. Evaluate conventional protective gear/wear.	Demonstrating/ looking at a video clip on how to properly use a fire extinguisher. Identifying the types of fire extinguishers. Discussing the various methods used in extinguishing fires. Conducting a fire drill exercise. Inviting a fire fighter to discuss fire safety with the school population. Creating and erecting muster point signs. Discussing the hazards associated	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 297-304 Fire extinguisher. Resource personnel: fire fighter. Sign materials: cardboard/ metal sheet, paint/ marker, nail, wood. Protective gear: respirators, aprons, lab coat, goggles, helmet, gloves, and safety boots etc.	Oral Questioning 1. Identify the suitable extinguisher to extinguish fires involving the following: gasoline, cooking oil, a wooden shed and electricity. Written Assessment 1. Poster on protective gear. 2. Muster point signs. Assessing students' response time to the fire drill. Assessing role play on fire safety tips.

		Including gears/wears in the home, school and workplace. Protective clothing – gloves, goggles, and helmets. Reference to community hygiene.	with electricity, and chemicals causing fires. Designing a poster showing conventional protective gear/wear and their use/s. Answering and discussing solutions to past CSEC questions on fire safety and protective gear.	Materials for poster; cardboard, markers, pictures, and glue. Past CSEC Integrated Science questions on fire safety and protective gear.	
Review of Lab. # 11	Students are allowed to make corrections to lab # 11 and grades will be adjusted.				
Lab. # 12	Students conduct experiments and submit lab reports. *Note: This lab can be assessed as an SBA since students were exposed to marked lab reports for various skills.*				
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video link on how to use a fire extinguisher: https://www.youtube.com/watch?v=lUojO1HvC8c				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 5
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Temperature control and ventilation	Students will: Know the three methods of heat transfer. Understand the principle of thermostatic control in the home.	Examine the application of the methods of heat transfer. Description and use of each heat transfer method. (a) conduction (use of conductors in the home). (b) convection (mention land and sea breezes). (c) radiation (heat from the sun and fire). Use of thermostats in household appliances. (a) principles by which thermostats operate. (b) functions of thermostats in electrical and gas ovens, and electrical irons.	Describing conduction, convection, and radiation. Stating everyday examples of conduction, convection, and radiation. Demonstrating conduction, convection, and radiation in the lab. Describing land and sea breeze. Conducting lab activity on heat transfer. Explaining the principles by which thermostats operate. Demonstrating how the bimetallic strip controls heat in appliances	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 227-238 Chart on conduction, convection, and radiation. Materials for lab activity: metal, wooden and plastic spoon, petroleum jelly, beaker, heat source and matches or metal rod, petroleum jelly, and paper clips. Potassium permanganate/ food colouring, straw, beaker, heat source, water or convection box, candle, matches and	Oral Questioning 1. Describe conduction, convection, and radiation. 2. State two examples of conduction, convection, and radiation. Written Assessments: 1. Answers to past CSEC questions on heat transfer. 2. Written lab report on heat transfer. Assessing demonstration of conduction, convection, and radiation.

			(electrical and gas ovens and electrical irons). Answering and discussing the solutions to past CSEC questions on heat transfer.	paper. Sample of a bimetallic strip from an iron, and thermostat from an oven, and a vacuum flask. Past CSEC Integrated Science questions on methods of heat transfer and thermostatic control.	
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on conduction, convection, radiation, application of heat transfer, a bimetallic strip, electric iron: https://www.youtube.com/watch?v=9joLYfayee8 https://www.youtube.com/watch?v=VxGIiOTuAIs https://www.youtube.com/watch?v=5GoZZKcNZiQ https://www.youtube.com/watch?v=HpCvWuvCUoA https://www.youtube.com/watch?v=82FPQ6z8vcE				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

					WEEK 6
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Temperature control and ventilation.	Students will: Understand the principles by which the types of thermometers work. Be aware of the cooling effects of evaporation. Know the need for proper ventilation.	Compare the types of thermometers. (a) definition of temperature and unit of measurement. (b) principles by which thermometers work. (c) the use and temperature range of the types of thermometers: (i) clinical; (ii) laboratory; and, (iii) digital. (d) advantages and disadvantages of alcohol and mercury thermometers. Temperature regulation in humans. (a) sweating. Role of latent heat of vaporisation. (b) effect of changes in body temperature on metabolic rate. Proper ventilation. (a) the importance of ventilation to living organisms. (b) identification of features of buildings which promote ventilation. (c) types of ventilation (natural and mechanical including air conditioners and fans). Reference to air pollution.	Defining the term temperature. Identifying the SI unit of temperature. Explaining the principles by which thermometers work. Making a model of a thermometer. Describing the use and temperature range of the types of thermometers: (i) clinical; (ii) laboratory; and (iii) digital. Discussing the advantages and disadvantages of alcohol and mercury thermometers. Demonstrating how to handle and care for thermometers. Explaining the importance of ventilation to living organisms.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg.238-253 Samples of the different types of thermometers. Materials to make models of thermometers: recycled materials and glue. Past CSEC Integrated Science questions on thermometers and ventilation.	Oral Questioning: 1. Define the term temperature. 2. Identify the SI unit for temperature. Written Assessment: Explain why there is a constriction in the bore of a clinical liquid-in-glass thermometer. Answers to past CSEC questions on heat transfer.

			Identifying features of buildings which promote ventilation. Identifying the types of ventilation (natural and mechanical including air conditioners and fans). Reference to air pollution. Answering and discussing the solutions to past CSEC questions on thermometers and ventilation.		
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on measuring temperature, types of thermometers and their uses, and natural ventilation: https://www.youtube.com/watch?v=P8v4nlNnXJw https://www.youtube.com/watch?v=k5V0KT1sMNs https://www.youtube.com/watch?v=891gaoqK6MQ				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 7
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
The universe and our solar system	Students will: Know the location of Earth in the universe. Be aware of how bodies stay in orbit. Be familiar with the structure of the solar system.	Components of the universe. (a) galaxies to include the Milky Way galaxy. (b) solar system. (c) asteroids. (d) planets/planetoids. (e) meteorites/meteoroids. (f) comets. (g) stars. Explain how bodies stay in orbit. (a) gravitational pull. (b) satellites (natural and artificial – geostationary orbit). Reference to centripetal force. Describe the solar system. (a) planets, elliptical shape, number of moons; size of planets, ecliptic orbits. (b) the sun, in relation to the planets (distance of planets from the sun). (c) location of the earth in the solar system.	Making models of the solar system. Identifying the components of the universe. (a) galaxies to include the Milky Way galaxy. (b) solar system. (c) asteroids. (d) planets/planetoids. (e) meteorites/meteoroids. (f) comets. (g) stars. Explaining how bodies stay in orbit. (a) gravitational pull. (b) satellites (natural and artificial – geostationary orbit). Reference to centripetal force. Stating the characteristics of space. Describing the use of satellites.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 368 Materials to make the solar system model: recycled materials e.g. newspaper, cardboard, glue etc. Worksheet on the solar system. Past CSEC Integrated Science questions on the solar system.	Oral Questioning 1. Give a brief description of the Milky Way galaxy. 2. Name the planets of the solar system. Written Assessment Completing worksheet on the solar system. Assessing models of the solar system.

			Describing the solar system. (a) planets, elliptical shape, number of moons; size of planets, ecliptic orbits. (b) the sun, in relation to the planets (distance of planets from the sun). (c) location of the earth in the solar system. Answering and discussing the solutions to past CSEC questions on the solar system.		
Review of Lab. # 12	Students are allowed to make corrections to lab # 12 and grades will be adjusted.				
Lab. # 13	Students conduct experiments and submit lab reports. *Note: This lab can be assessed as an SBA since students were exposed to marked lab reports for various skills.*				
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. A. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on the beginning of our universe, the solar system song: https://www.youtube.com/watch?v=DmUiCweDic4 https://www.youtube.com/watch?v=ZHAqT4hXnMw https://www.youtube.com/watch?v=libKVRa01L8				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 8
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
The universe and our solar system	Students will: Understand how the Earth is affected by other bodies. Appreciate the need for human exploration of the universe.	Discuss how Earth is affected by other bodies. (a) day and night. (b) concept of shadow formation. (c) description of eclipses – solar and lunar. (d) phases of the moon – new moon, first quarter, full moon, last quarter. Reference to tides. Human exploration of the universe. Including: (a) reasons for exploration of the universe. (b) characteristics of outer space temperature, radiation, lack of oxygen, pressure, and lack of gravity. (c) international space station. (d) James Webb and Hubble telescope. (e) types of exploration of other planets (Mars, Jupiter; flyby, orbiter, rover (lander), humans).	Discussing how the earth is affected by other bodies. (a) day and night. (b) concept of shadow formation. (c) description of eclipses – solar and lunar. (d) phases of the moon – new moon, first quarter, full moon, last quarter. Reference to tides. Making a model of the moon phases. Describing how the percentage of light changes as the moon orbits the Earth. Demonstrating rotation and revolution of the Earth. Demonstrating solar and lunar eclipses. Describing human exploration of the	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 374 Materials for the model of moon phases: recycled cardboard, foam balls glue etc. Globe of the Earth, ball, and flashlight. Worksheet on moon phases. -	Oral Questioning 1. Approximately what percentage of the Moon's disc reflects light to Earth during i Full moon? ii New moon? iii First quarter moon? Written Assessment Worksheet on moon phases. Assessing demonstration on rotation, revolution, solar and lunar eclipses.

			universe. Including: (a) reasons for exploration of the universe. (b) characteristics of outer space temperature, radiation, lack of oxygen and pressure, and lack of gravity. (c) international space station. (d) James Webb and Hubble telescope. (e) types of exploration of other planets (Mars, Jupiter; flyby, orbiter, rover (lander), humans). Looking at videos on Mars and Jupiter exploration. Answering and discussing the solutions to past CSEC questions on the solar system.		
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on the rotation and revolution, solar eclipse, lunar eclipse, phases of the moon, Mars and Jupiter exploration: https://www.youtube.com/watch?v=l64YwNl1wr0 https://www.youtube.com/watch?v=E6OtLfszaVI				

	https://www.youtube.com/watch?v=LH-aSizsx1o https://www.youtube.com/watch?v=LC5rEhxGqT4 https://www.youtube.com/watch?v=sioX2bbkZms https://www.youtube.com/watch?v=D8pnmwOXhoY https://www.youtube.com/watch?v=R6K4M4Q09Kw&t=338s

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 9
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
The terrestrial environment	Students will: Know the various types of air masses. Be aware of the four types of local fronts.	Effects of air masses in the Caribbean. (a) types of air masses (maritime tropical, continental tropical, maritime polar, continental polar). (b) air masses affecting the Caribbean - the spread of pollutants (radioactive fallout, volcanic dust, industrial waste, Sahara dust, landfill fumes). (c) types of fronts (to include definition) and their effect on the weather (cold, warm, stationary, occluded).	Defining the term air masses. Identifying the different air masses in the Caribbean. Discussing how air masses affect the Caribbean (the spread of pollutants, radioactive fallout, volcanic dust, industrial waste, Sahara dust and landfill fumes). Looking at video clips on air masses. Looking at a video clip on the four types of local fronts. Distinguishing among the four types of local fronts. Looking at a video clip on how the fronts affect the weather. Discussing how the fronts affect	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 391 & 395 Charts on types of local fronts. Past CSEC Integrated Science questions on air masses and fronts.	Oral Questioning 1. Four important air masses are maritime tropical, maritime polar, continental tropical and continental polar. For EACH, state its TWO main characteristics and give an example of a region in which it is formed. 2. Name the four types of local fronts. Written Assessments: 1. Answers to past CSEC questions on cycles and air masses.

			weather. Interpreting weather patterns from weather reports. Answering and discussing past CSEC questions on air masses and fronts.		Assessing interpretation of weather from weather reports.
Review of Lab. # 13	Students are allowed to make corrections to lab # 13 and grades will be adjusted.				
Lab. # 14 & 15	Students conduct experiments and submit lab reports. *Note: These labs can be assessed as an SBA since students were exposed to marked lab reports for various skills.*				
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video link on air masses, Saharan dust, types of fronts, how fronts affect the weather, weather report: https://www.youtube.com/watch?v=QxvF1nnWRwg https://www.youtube.com/watch?v=ANPm7p1HBos https://www.youtube.com/watch?v=tsD6zkBMmck https://www.youtube.com/watch?v=mcpBTHgkrBk https://www.youtube.com/watch?v=4gc7puH279s				

	https://www.youtube.com/watch?v=CDtU78pd_I8 https://www.youtube.com/watch?v=qCT3mRQzoBA

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 10
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
The terrestrial environment	Students will: Understand the characteristics of a cyclonic storm. Understand the effects of tidal waves.	Weather patterns in the Caribbean. (a) weather patterns (wet and dry seasons). (b) definition of a cyclone – low pressure, wind speed, meeting of air masses. (c) development of tropical depressions, tropical storms, and hurricanes. Effects of tides. (a) the types of tides - high, low, spring, and neap tides. (b) the formation of tides. (c) the effects of tides (coastal erosion). (d) brief description of tidal waves. (e) description and causes of a tsunami - underwater landslides, volcanic eruptions, and earthquakes.	Describing the characteristics of weather patterns patterns (wet and dry seasons). (b) definition of a cyclone – low pressure, wind speed, meeting of air masses. (c) development of tropical depressions, tropical storms, and hurricanes. Outlining steps in hurricane preparation. Looking at video clip on tidal waves. Describing the effects of tides (a) the types of tides - high, low, spring, and neap tides. (b) the formation of tides. (c) the effects of tides (coastal erosion). Demonstrating the formation of spring and neap tides.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 395 Past CSEC Integrated Science questions on cyclones and tidal waves.	Oral Questioning 1. State FIVE ways you can prepare for a hurricane. 2. Distinguish between a tsunami and a tidal wave in terms of how they are formed. Written Assessment Describe the physical conditions experienced by animals and plants living along the seashore. Answers to past CSEC questions on cyclones and tides. Assessing demonstration of spring and neap tides.

			Describing the effects of tidal waves- (e) description and causes of a tsunami - underwater landslides, volcanic eruptions, and earthquakes. Answering and discussing past CSEC questions on cyclones and tides.		
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on cyclones, tidal waves, tsunamis, causes of waves, and how tides are formed and coastal erosion: https://www.youtube.com/watch?v=F4ApOc4p-CE https://www.youtube.com/watch?v=4DlqVuNMydk https://www.youtube.com/watch?v=Wx9vPv-T51I https://www.youtube.com/watch?v=mp4ec14BndQ https://www.youtube.com/watch?v=5ohDG7RqQ9I https://www.youtube.com/watch?v=B08iDMXYtR8				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 11
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
The terrestrial environment	Students will: Know the causes of the different types of volcanic eruptions.	Causes of the different types of volcanic eruptions. (a) the types of volcanoes: (i) cinder cone or spatter cone; (ii) shield; and, (iii) composite or stratovolcano. (b) the ecological consequences of volcanoes in the long and short term. Include kick-em-Jenny underwater volcano off the coast of Grenada, La Soufriere in St Vincent. (c) the relationship between earthquakes and volcanoes. (d) the function of the seismograph. The Richter scale. Significance of the numbers on the Richter scale.	Making models of volcanoes. Explaining the causes of different types of volcanic eruptions. Explaining the relationship between earthquakes and volcanoes. Discussing the function of a seismograph. Explaining the significance of the numbers on the Richter scale. Answering and discussing the solutions to past CSEC questions on volcanoes.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung Pg. 396 Materials for the model of a volcano: recycled materials, baking soda, vinegar, food colouring and glue. Diagram of the seismograph and Richter scale. Past CSEC Integrated Science questions on volcanoes.	Oral Questioning 1. Define the term ‘volcano’. 2. What is meant by: i. seismograph? ii. the Richter scale? Written Assessment Answers to past CSEC questions on volcanoes. Assessing the model of the volcano.
Review of Lab # 14 & 15	Students are allowed to make corrections to labs # 14 & 15 and grades will be adjusted.				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.
Video Links	Video links on volcanoes: https://www.youtube.com/watch?v=VNGUdObDoLk https://www.youtube.com/watch?v=lAmqsMQG3RM

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 12
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Water and the Aquatic Environment	Students will: Be familiar with the chemical and physical properties of water. Appreciate the need for water in daily life.	Properties of water. (a) chemical properties of sea and fresh water. (b) physical properties of sea and fresh water. (c) effects of sea and fresh water on aquatic life. Distinguish between hard and soft water. (a) characteristics of hard and soft water. (b) advantages and disadvantages of hard and soft water. Uses of water. (a) role in life processes - excretion, digestion, transport of substances, respiration. (b) uses in a home - drinking, cooking, washing, cleaning (consider wastage and conservation). (c) agriculture including hydroponics,	Describing the (a) chemical properties of sea and fresh water. (b) physical properties of sea and fresh water. (c) effects of sea and fresh water on aquatic life. Using boiling and melting points to compare the physical properties of salt water and fresh water. Conduct experiments to determine the degree of hardness of water. Conduct experiments to soften samples of hard water by: (i) boiling; (ii) adding washing soda; and (iii) distillation. Stating the use of water in everyday life. Designing poster on water conservation	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 414 & 417 Materials for posters: cardboard, markers, pictures, and glue. Past CSEC Integrated Science questions on uses of water.	Oral Questioning 1. State FOUR properties of pure water and give TWO differences in the properties of seawater and freshwater. 2. Identify FOUR things Jill can do to conserve water in her home. Written Assessment Answers to past CSEC questions on the uses of water. Assessing water conservation posters.

		aquaculture, and mariculture. (d) recreational activities. (e) firefighting. (f) generation of electricity.	methods. Answering and discussing the solutions to past CSEC questions on the uses of water.		
Lab # 16 & 17	Students conduct experiments and submit lab reports. *Note: These labs can be assessed as an SBA since students were exposed to marked lab reports for various skills.*				
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on Properties of water, importance of water, uses of water: https://www.youtube.com/watch?v=h0py6BFlFZw https://www.youtube.com/watch?v=HLJl6MDuCWQ https://www.youtube.com/watch?v=KMP9-49I1U4				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 13
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Water and the Aquatic Environment	Students will: Know of the various methods used locally for fishing. Be aware of the effects of water pollution on aquatic life. Know methods of purifying water.	Methods used locally for fishing. Brief description of methods, including by hand; spears/harpoons; netting (trawling, long-lining); pots or traps; and fish farming. Effects of water pollution on aquatic life. (a) sources of pollution, for example, nitrates, phosphates, various pesticides, and oil spills. (b) effects of pollution on aquatic life include but are not limited to eutrophication, fish kills, destruction of the coral reef, mangroves, and wetlands. Methods of purifying water. (a) sources of water. (b) methods of purifying water: the treatment of seawater for domestic use	Identifying or interviewing local fishermen on the various methods used locally for fishing. Field trip to the Ministry of Agriculture Fishery's Department or Regional Fishery's Department. Writing a report on the effects of water pollution on aquatic life. Identifying the sources of water pollution: for example, nitrates, phosphates, various pesticides, and oil spills. Looking at video clips on the effects of water pollution but not limited to eutrophication, fish kills, and destruction of the coral reef, mangroves, and wetlands. Looking at video clip on water	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 414 Materials for lab activity: water, beakers, chlorine, Bunsen burner, tripod stand, filter paper, funnel, conical flask, distillation apparatus, carbon, and alum. Resource personnel: local fishermen. Past CSEC Integrated Science questions on fishing methods, water pollution and water purification.	Oral Questioning 1. State the harmful effects of EACH of the following pollutants on aquatic life: I nitrate and phosphates. II an oil spill III pesticides Written Assessment Report on the effects of water pollution on aquatic life.

		(desalination), boiling, filtration, chlorination, distillation and additives of alum and carbon. Reference to separation techniques.	purification. Identifying sources of water. Investigating methods of purifying water e.g. methods of purifying water: the treatment of seawater for domestic use (desalination), boiling, filtration, chlorination, distillation and additives of alum and carbon. Reference to separation techniques. Investigate the effects of the removal of oxygen from water. Answering and discussing the solutions to past CSEC questions on fishing methods, water pollution and water purification.		
Review of Lab 16 & 17	Students are allowed to make corrections to labs # 14 & 15 and grades will be adjusted.				
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on fishing methods, water pollution, water treatment- boiling, filtration, chlorination, distillation, and desalination: https://www.youtube.com/watch?v=-EXcDPpngi0				

	https://www.youtube.com/watch?v=yUGSb2LiZSg https://www.youtube.com/watch?v=38aYXZou4uc https://www.youtube.com/watch?v=31ZUXx6NXDA https://www.youtube.com/watch?v=K5j12tvXeA0 https://www.youtube.com/watch?v=qjmCOYyIy4E https://www.youtube.com/watch?v=WsWD746lzt0 https://www.youtube.com/watch?v=mZ7bgkFgqJQ

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 14
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Water and the Aquatic Environment	Students will: Understand the conditions for flotation.	Conditions for flotation. (a) Upthrust and density. (b) Archimedes principle. (c) The Plimsoll line on boats and ships. Reference to Maximum loading capacity. Importance of navigational devices used at sea. (a) Compass, sonar, radar, and GPS as devices. (b) How the magnetic compass works. (c) Maritime safety standards. Water safety devices. Life rafts and jackets, inflatable tubes. Effects of diving on the human body. Effects of Scuba-diving and freediving: (a) Respiratory problems:	Stating the conditions for floatation. Defining the terms upthrust and density. Stating Archimedes principle. Examining the Plimsoll line on boats and ships. Conduct experiments to compare the sinking and floating of similar materials in fresh and seawater. Simple measurements of densities. Looking at video clips on various navigational devices used at sea (a) Compass, sonar, radar, GPS as devices. (b) How the magnetic compass works. (c) Maritime safety standards.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 417 Sample of freshwater and seawater and beakers. Materials for lab activity on flotation: objects of different densities, seawater, freshwater, and beakers. Past CSEC Integrated Science questions on properties of Archimedes principle, navigational devices, and safety	Oral Questioning 1. Name three water safety devices we can find on a ship. 2. Name FOUR navigational devices that Alex could use to help him safely navigate his cargo ship through the waters of the Caribbean. Written Assessments: 1. State Archimedes' principle and identify the conditions necessary for an object to float. 2. Define the term 'Plimsoll line' and suggest why a boat displaces more water as it travels from the ocean

		damage to membrane due to high pressure. (b) Decompression sickness: The bends, nitrogen narcosis, use of decompression chambers. (c) Embolism. (d) Baro trauma (ears, lungs). Reference to the mechanism of breathing.	Making a model of a compass. Describing the use of various navigational devices used at sea (Life rafts and jackets, inflatable tubes). Examining water safety devices or pictures of water safety devices. Demonstrating the use of water safety devices. Looking at video clips on water safety devices. Discussing hazards associated with the Effects of Scuba-diving and freediving: (a) Respiratory problems: damage to membrane due to high pressure. (b) Decompression sickness: The bends, nitrogen narcosis, use of decompression chambers. (c) Embolism. (d) Baro trauma (ears, lungs). Reference to the mechanism of breathing. Answering and discussing the	devices.	into the mouth of a river. Assessing the model of the compass. Assessing demonstration on the use of water safety devices.

			solutions to past CSEC questions on the Archimedes principle, navigational devices, and safety devices.		
Lab # 18	Students conduct experiments and submit lab reports. *Note: These labs can be assessed as an SBA since students were exposed to marked lab reports for various skills.*				
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on Archimedes' principle, pressure in liquids, Plimsoll line, water safety devices, and hazards associated with scuba diving: https://www.youtube.com/watch?v=ijj58xD5fDI https://www.youtube.com/watch?v=wChr0hCga5g https://www.youtube.com/watch?v=TpHv-sGE_Dk https://www.youtube.com/watch?v=6E0bT6B5Zm4 https://www.youtube.com/watch?v=liwlisaH_LU https://www.youtube.com/watch?v=xIG3FDGW9l4				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 15
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Forces	Students will: Understand the basic principles of forces. Know gravity as a force.	Principles of forces. (a) Definition of force Use of formula F = m × a. (b) Types of forces – push, pull and twist. (c) Newton's third law – Action reaction principle applied in space transport. (d) Forces in the air – the forward motion of jet aircraft. Relationship between the shape of wings of planes and birds and the lift forces they experience while moving through air, the effects of wind speed and wind currents on the motion of aircraft. (e) Friction – motion of vehicles, road surfaces and tyres. Gravity as a force. (a) Definition – gravitational force, and non-contact force. (b) Newton's	Defining the term force. Using formula F = m × a to find force. Identifying types of forces. Stating Newton's three laws- Action reaction principle applied in space transport. Looking at video clips on forces and application of Newton's 3 laws. Demonstrating the Action-reaction principle, for example, releasing an inflated balloon, using a pair of spring balances; Demonstrating by blowing over strips of paper held at one end; using of ball on different surfaces; use of paper aircraft models and fan. Looking at video clips of forces in the air – the forward motion of jet aircraft. Relationship between the shape of	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 448 Materials for action-reaction demonstration: Strips of paper, balls, different surfaces- wooden, concrete, tile etc., paper aircraft, spring balances, balloons etc. Past CSEC Integrated Science questions on forces.	Oral Questioning 1. State Newton's 3rd law of motion and cite an example that demonstrates it. Written Assessment Answers to past CSEC questions on forces. Assessing demonstrations on action-reaction.

		first law – Centrifugal forces, centripetal forces (satellites).	wings of planes and birds and the lift forces they experience while moving through air, the effects of wind speed and wind currents on the motion of aircraft. Defining the term friction. Discussing how friction affects the motion of vehicles, road surfaces and tyres. Looking at the video clip on friction. Defining gravitational force, and non-contact force. Stating Newton's first law. Defining the term centripetal forces. Looking at video clips on the application of centripetal forces (satellites). Answering and discussing the solutions to past CSEC questions on forces.		
Review of Lab # 18	Students are allowed to make corrections to lab # 18 and grades will be adjusted.				
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung				

	C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.
Video Links	Video links on forces, and application of Newton's 3 laws: https://www.youtube.com/watch?v=uoKo3DbfYZk https://www.youtube.com/watch?v=yg3bTMcAnsM https://www.youtube.com/watch?v=YyJSlcIbd-s https://www.youtube.com/watch?v=ztt1mVYH6x4 Video link on friction: https://www.youtube.com/watch?v=V2P6CuHVWvI Video link on centripetal forces: https://www.youtube.com/watch?v=KvCezk9DJfk

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 16
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Forces	Students will: Know how to find the centre of gravity of a regular and irregular shape. Know the 3 types of equilibrium.	Equilibrium (a) Types of equilibrium – stable, unstable, neutral. (b) Application of equilibrium in medicine (chemical balance in the body), chemistry (reversible chemical reaction), and Biology (homeostasis). (c) Moments of a force about a point is the product of the force and the perpendicular distance of its line of action from a point. Use of formula M = F x d. (d) Conditions for equilibrium under parallel forces.	Investigating the centre of gravity of a regular and irregular shape. Identifying the conditions for equilibrium under parallel forces. Investigating the 3 types of equilibrium. Investigate using the rule suspended by a spring balance and kept horizontal by known suspended weights to show that: (i) the sum of the forces in one direction must equal the sum in the opposite direction; and (ii) the sum of the clockwise moments about a pivot must equal the sum of anti–clockwise moments.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 456 Materials for lab activity on the centre of gravity: lamina (cardboard), string, thumb tack and mass (eraser). Materials for lab activity on equilibrium: ruler, and spring balance. Past CSEC Integrated Science questions on the centre of gravity.	Oral Questioning 1. Describe how you can determine the centre of gravity of an irregularly shaped flat piece of metal. Written Assessment Lab report on the centre of gravity. Answers to past CSEC questions on the centre of gravity. Assessing demonstration on the 3 types of equilibrium.

			Answering and discussing the solutions to past CSEC questions on the centre of gravity.		
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on the centre of gravity and moments: https://www.youtube.com/watch?v=vDqcEIdhJ_8 https://www.youtube.com/watch?v=22VGQM1jCn8				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 17
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Forces	Students will: Understand the principles of momentum conservation.	Principle of momentum conservation. (a) Definition of momentum. (b) The law of conservation of momentum. Total momentum before the collision is equal to the total momentum after the collision. (c) Consider conservation of linear momentum (refer to vehicular collision, rocket engine, playing pool/billiards). Use of formula (p = m x v) to do simple calculations. Functions of simple machines. (a) Functions of simple machines: (i) they make work easier, and (ii) they are used as force multipliers for convenience of application of a force. (b) Types of simple machines:	Defining the term momentum. Stating the law of conservation of momentum. Explaining the formula for momentum and how the unit is derived. Demonstrating linear momentum using examples of changed mass and velocity (refer to vehicular collision, rocket engine, playing pool/billiards). Performing calculations using p=m x v. Conducting lab experiments showing the law of conservation of momentum. Defining the term simple machines.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg.265- 268, 310 Materials for lab activity: marbles, ramp, and timer. Simple machines: hammer, staple machine, bottle opener, crowbar, scissors, tweezer, pulleys, screw etc. Calculators Past CSEC Integrated Science questions on energy and momentum & simple machines.	Oral Questioning 1. What is the law of conservation of momentum? 2. Name the 3 types of simple machines. 3. State one advantage of using a simple machine. Written Assessments 1. Answers to worked questions on momentum. 2. Answers to past CSEC questions on energy and momentum.

		(i) levers: - classes of levers (organising load, effort and fulcrum in three different ways); - compare the different classes of levers; and - simple levers in the mammalian skeleton. (ii) pulleys; and (iii) inclined planes. (c) Simple machines used in or associated with vehicles, for example, motor cars, push carts, draglines, and bicycles. Reference to Movement of the limbs in the skeleton.	Stating the functions of simple machines. Discussing the use of a force multiplier for the convenience of application of a force. Identifying types of simple machines: levers, pulleys, inclined planes. Identifying the classes of levers using everyday examples. Organising the load, effort and fulcrum using everyday examples. Identifying simple machines used in or associated with vehicles, for example, motor cars, push carts, draglines, and bicycles. Identifying simple levers in the mammalian skeleton. Answering and discussing the solutions to past CSEC questions on energy transfer, momentum and simple machines.		
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung.				

	C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.
Video Links	Video links on momentum, simple machines, levers, and inclined planes: https://www.youtube.com/watch?v=DxKelGugDa8 https://www.youtube.com/watch?v=fvOmaf2GfCY https://www.youtube.com/watch?v=Rs-spcFV7dI https://www.youtube.com/watch?v=yjUsfG_UvZE

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 18
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Forces	Students will: Know the major bones of the human skeleton. Understand the structure of the skeleton to its functions. Know the different joints in the human body. Be aware of how the skeletal muscles function in the movement of the limb.	Structure of the skeleton to its functions. (a) Major bones of the human skeleton: Cranium, clavicle, scapula, vertebral column (cervical, thoracic, lumbar), humerus, radius, ulna, rib cage, sternum, pelvic girdle, femur, tibia, fibula. Movement, protection, support, breathing, protection of blood vessels. Skeletal muscles function in the movement of the limb. (a) Joints in the human body: Hinge joint, fixed joint, ball, socket, and gliding. (b) Role of antagonistic muscles. Reference to Simple levers in the mammalian skeleton.	Looking at a video clip on the bones of the skeletal system. Identifying the major bones of the human skeleton. Referencing their bodies to determine the functions of the skeleton. Identifying the 4 types of joints in the human body. Demonstrating the role of antagonistic muscles. Reference to Simple levers in the mammalian skeleton. Answering and discussing the	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 141-144 Chart of the human skeleton/ model of the human skeleton. Past CSEC Integrated Science questions on The Human Skeleton.	Oral Questioning 1. Gave 3 functions of the skeleton. Written Assessment Answers to CSEC questions on the human skeleton. Assessing song on the major bones of the skeletal system.

			solutions to past CSEC questions on the human skeleton.		
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video link on skeletal system song: https://www.youtube.com/watch?v=h5dYvPruBFY				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 19
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Forces	Students will: Understand the principles of mechanical advantage and energy conversion. Know factors that contribute to inefficiencies in machines and ways of overcoming their influences.	Efficiency of simple machines. (a) The principle of energy efficiency and energy conversion. Law of conservation of energy (energy is neither created nor destroyed, it can be converted from one form to another). Use of the equation: work done = force x distance moved in the direction of the force. (b) The principle of mechanical advantage (ratio of the load to the effort applied). Use of the equation: mechanical advantage = load ÷ effort. (c) The factors that contribute to the inefficiencies of machines and ways of overcoming their influences. The motorcar,	Describing the principles of energy efficiency and energy conversion. Performing calculations using work done = force x distance moved in the direction of the force. Performing simple mechanical advantage calculations using the formula MA= Load ÷ effort. Stating the factors that contribute to the inefficiencies of machines and ways of overcoming their influences. The motorcar, lawnmower, and bicycle; have factors such as rusting, corrosion and friction. Reference to Interconversion of energy and tarnishing of metals.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 322 Calculators.	Oral Questioning 1. State the principle of energy efficiency and energy conservation. Written Assessment Answers to exercises on work and mechanical advantage.

		lawnmower, and bicycle; have factors such as rusting, corrosion and friction. Reference to Interconversion of energy and tarnishing of metals.	Answering and discussing past CSEC questions on simple machines.		
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on energy conversion, and inefficiencies of simple machines: https://www.youtube.com/watch?v=ftj23FRS2LI https://www.youtube.com/watch?v=Ab9CexEFwSY				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 20
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Metals and non-metals	Students will: Be aware of the uses of metals and non-metals in relation to their properties. Understand the advantages and disadvantages of using plastic. Know the reactivity series of metals. Appreciate the use of aluminium in cookware and canning.	Physical properties of metals and non-metals to their uses. (a) metals. (b) nonmetals to include plastics, wood, ceramics, and textiles (natural and man-made). (c) properties such as electrical conductivity, thermal conductivity, melting point, density, and tensile strength. (d) appropriateness of the materials used in sports/sporting equipment. Reactivity of metals. Aluminium (al); copper (cu); iron (fe); tin (sn); silver (ag); zinc (Zn). Reference to household appliances. Advantages and disadvantages of using cooking or canning utensils made of aluminium.	Identifying the uses of metals and non-metals in relation to their properties. Stating the uses of metals and non-metals in relation to their properties. Identifying materials used in sports/sporting equipment. Measuring the elasticity of specific substances. Comparing the reactivity of metals. Investigating the reactivity of metals. Observe which metals react with dilute acid and which do not; write simple word equations to show their reaction. Arranging metals in order of most to	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 326 Periodic table of elements. Materials for lab activity: copper, iron, zinc etc., test tubes, test tube rack, and dilute HCl. Past CSEC Integrated Science on metals and non-metals.	Oral Questioning 1. List 2 properties of metals and non-metals. Written Assessment When very acidic substances are stored in aluminium containers the acid reacts with the aluminum oxide removing the protective layer. This results in the release of aluminium ions in our food. Discuss the health hazard of aluminium ion contamination in our food.

		(a) advantages. (b) disadvantages (consideration of toxicity and corrosion).	least reactive. Examining household utensils and cans made of aluminium. Discussing the advantages and disadvantages of using cooking or canning utensils made of aluminium. Answering and discussing the solutions to past CSEC questions on metals and non-metals.		Assessing mnemonic device on reactivity series of metals.
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video link on the reactivity of metals, metals, and non-metals: https://www.youtube.com/watch?v=TGPPPFczOj0 https://www.youtube.com/watch?v=Rc2JBp91V7o				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 21
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Metals and non-metals	Students will: Know the benefits of using alloys.	Benefits of using alloys to make household items. (a) alloys and examples of alloys commonly found in the home and workplace - steel, brass, soft solder, and electroplating. (b) benefits of using alloys. Conditions which cause rusting. (a) factors which affect the rate of rusting: (i) sea spray; (ii) emission from industrial plants; and, (iii) climate (tropical). (b) tarnishing as a chemical process (oxidative). Rusting in relation to iron and steel. (c) word equation for rusting: iron + oxygen + water → rust(iron oxide). The methods used to reduce or	Identifying the benefits of using alloys to make household items. Listing common alloys found in the home and workplace- steel, brass, soft solder, and electroplating. Looking at video clips on alloys. Investigate the conditions needed for rusting. Examining rusty nails from an experiment. Stating the conditions that cause rusting. Discussing how each condition causes rusting.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 330 Household utensils made of aluminium and cans. Pictures of items made of alloys or items on display that are alloys e.g. coins, solder wire, stainless steel etc. Materials for lab activity: shiny nails, test tube, acid, oil, chalk, cotton wool, distilled water etc. Past CSEC Integrated	Oral Questioning 1. State 2 advantages of using alloys. 2. List 3 conditions that cause rusting. 3. Explain 2 ways of preventing rust. Written Assessment Answers to CSEC questions on metals and non-metals. Assessing display of alloys and their uses in the home and workplace.

		prevent tarnishing of metals. The scientific principles of the following methods are used to prevent tarnishing for commercial and household purposes: (a) painting. (b) covering with oil or plastic. (c) proper storage (moisture free). (d) use of drying agents (desiccants). (e) electroplating. (f) galvanizing. (g) alloy (steel). Reference to the efficiency of machines.	Looking at the video clip on rusting. Identifying the factors which affect the rate of rusting. Describing the methods used to prevent tarnishing for commercial and household purposes: (a) painting. (b) covering with oil or plastic. (c) proper storage (moisture free). (d) use of drying agents (desiccants). (e) electroplating. (f) galvanizing. (g) alloy (steel). Reference to the efficiency of machines. Answering and discussing the solutions to past CSEC questions on metals and non-metals.	Science questions on metals and non-metals.	Assessing how students set up a rusting investigation.
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on alloys, rusting, rust prevention and treatment, electroplating: https://www.youtube.com/watch?v=KgUmNQD6m5Q https://www.youtube.com/watch?v=TKMgUCq3npg https://www.youtube.com/watch?v=OxhCU_jBiOA				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 22
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Household chemicals	Students will: Know the uses of some common household chemicals. Understand the differences among acids, bases, and salts.	Uses of common household chemicals. (a) water is the most common chemical in the home; water is a solvent used in many household chemicals. (b) household chemicals and their uses (chemical and household names and eco-friendly products): (i) hard surface cleaners (disinfectant, ammonia, bleach, degreaser) (ii) personal hygiene (bath soap, body wash, deodorant, shampoos, antiperspirants, conditioners, toothpaste, mouthwash) (iii) laundry (soap, detergents, fabric softeners) (iv) kitchen (dishwashing liquid, oven cleaner, salt, vinegar, baking powder, baking soda) (v) health (antacid, antiseptic, pain killers, hand sanitisers, alcohol).	Displaying common household chemicals and stating the use of each. Observing common household chemicals. Discussing the safe and economic use of some common household chemicals (hard surface, personal hygiene, laundry, kitchen, and health). Examining reagent bottle labels and identifying common safety symbols - corrosive, toxic, flammable, and explosive. Answering and discussing solutions	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung Pg. 357 Common household chemicals: hydrogen peroxide, bleach, vinegar etc. Reagent bottles with safety symbols.	Oral Questioning 1. Distinguish between a disinfectant and an antiseptic and give a named example of EACH. 2. Suggest THREE guidelines to follow to ensure that household chemicals are used safely. Written Assessment Answers to past CSEC questions on household chemicals.

		(c) safety symbols (alert to potential hazards) - corrosive, toxic, flammable, explosive, oxidizing, harmful or irritant, radioactive. Reference to methods used in extinguishing fires. (d) The safe use of household chemicals. (e) The economic use of household chemicals (buying in bulk, using recommended quantities, long shelf life).	to past CSEC questions on household chemicals.		
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video link on warning signs: https://www.youtube.com/watch?v=WQyObsamnMw				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 23
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Household chemicals	Students will: Understand the differences among acids, bases, and salts.	Properties of acids, bases, and salts. (a) The concept of pH as it relates to the properties of acids, bases and salts. (b) Classification of household chemicals into acids, bases, and salts. (c) The principle of neutralisation includes but is not limited to: (i) agriculture; (ii) health; (iii) nutrition; (iv) cooking; and (v) sanitation. Properties of the states of matter (a) Characteristics of solid liquid and gas: (i) arrangement of particles (ii) shape and volume (iii) forces of attraction (iv) movement of particles. (b) Changes of state (processes to	Making pH chart. Investigating pH of common household chemicals using universal indicator solution/ paper. Defining the terms acid, base, and salt. Classifying household chemicals into acids, bases, and salts. Investigating the principle of neutralisation. Conduct simple experiments to demonstrate the changes in the state of matter (solid liquid and gas).	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 342 Materials for lab activity on pH: household chemicals- bleach, soap, toothpaste etc., universal indicator solution/paper, test tubes, test tube rack, and dropper. pH scale chart Materials for pH chart: cardboard, and crayons. Materials for lab activity on neutralisation: bicarbonate of soda, white cloth, droppers, fruit stains, borax for fruit	Oral Questioning 1. Identify the most common chemical used in the home and state why it is used so extensively. 2. State THREE properties of an acid and THREE properties of an alkali. 3. What is the pH scale used for? 4. What is matter? 5. Identify the 3 states of matter. 6. Describe the shape, volume, and arrangement of the 3 states of matter. Written Assessment Water can exist as solid ice,

		include deposition, freezing, condensation, sublimation, evaporation, and melting). (c) Plasma (simple definition and example) of plasma (the fourth state of matter).	Defining the term: 'Matter'. Identifying the states of matter using the change of state of ice. Comparing the properties of solids, liquids and gases using everyday examples or illustrations showing the arrangement of particles, volume, shape etc. Suggested Lab Work: To Determine the freezing point of naphthalene. Constructing a table to show the properties of the states of matter. Answering and discussing solutions to past CSEC questions on acids, bases, salts and matter.	and wine and tea stains. Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 3-8 Materials for lab Work: naphthalene, water, beaker, test tube, thermometer, stopwatch, mortar and pestle, retort stand and clamp. Ice cubes, Bunsen burner, beaker, illustrations of arrangement of particles, volume, and shape etc. of solid, liquid and gas. Past CSEC Integrated Science questions on acid, bases, and salts.	liquid water, and gaseous steam. State the differences among these three states in terms of their shape, the arrangement of their particles, the movement of their particles and the forces of attraction between their particles. Lab reports on the pH of household substances and neutralisation. Assessing pH chart.
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on pH scale, strengths and weakness of acids and bases, neutralization of alkalis, matter, changes of state of matter:				

	https://www.youtube.com/watch?v=ckbsHM2igT0 https://www.youtube.com/watch?v=ckbsHM2igT0 https://www.youtube.com/watch?v=-fyev2aWcLs https://www.youtube.com/watch?v=wclY8F-UoTE https://www.youtube.com/watch?v=xYU7RSoOZ0U

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 24
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Household chemicals	Students will: Know the differences among solutions, suspensions, and colloids. Understand the principles of separation techniques.	Properties of mixtures. Mixtures: solutions, suspensions, and colloids. (a) Definition of the terms solutions, solute and solvent. (b) Differences between a solution, a suspension, and a colloid. (c) Classification of household chemicals in each category. Separation techniques. (a) Difference between aqueous and non-aqueous solutions. (b) Application of separation methods to home and workplace to include but not limited to: (i) distillation (winemaking); (ii) filtration (cooking); (iii) chromatography (bleeding colours in the laundry); (iv) crystallization (honey to form sugar crystals, production of sugar from sugar cane); and, (v) evaporation (preparation of	Making solutions, and suspensions. Matching the definition of solution, suspension, and colloids. Observing common household chemicals and classifying them as solutions, suspensions, and colloids. Describing an aqueous and non-aqueous solution. Demonstrating distillation, filtration, chromatography, crystallization, and evaporation. Conducting a simple experiment to	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 349 Materials for lab activity: beakers, water, salt/ potassium permanganate crystals, sand and a stirring rod. Materials for separation technique: distillation apparatus, beakers, funnel, filter paper, conical flask, stirring rod, alcohol, ink. Past CSEC Integrated Science questions on solutions, suspension and	Oral Questioning 1. Using particle size, passage of light and sedimentation, distinguish between a solution, a colloid, and a suspension. Written Assessment Assessing demonstration of separation techniques.

		table salt). (c) Desalination plants (distillation and reverse osmosis).	separate salt from a mixture of salt and sand. Explaining the use of desalination plants. Answering and discussing past CSEC questions on solution, suspension, colloids, and separation techniques.	colloids, and separation techniques.	
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on solutions, filtration, chromatography, and simple distillation: https://www.youtube.com/watch?v=Uhpm-cEZzyg https://www.youtube.com/watch?v=FmZrbajuUXw https://www.youtube.com/watch?v=ZCzgQXGz9Tg https://www.youtube.com/watch?v=0IWy_hdgKJM				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 25
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Household chemicals	Students will: Understand the cleaning actions of scouring powders and detergents on household appliances. Understand the difference between soap and soapless detergents.	Effects of cleaning agents on household appliances. (a) Cleaning agents (scouring powders, detergents, rust removers, lime scale removers, oxidizing agents). (b) Different reactions of cleaning agents: abrasive and chemical action. (c) Effects on appliances made from Aluminum (Al), Copper (Cu), Iron (Fe), Tin (Sn), Silver (Ag), Zinc (Zn). Reference to metals. Soapy (soap) and soapless detergents. (a) Methods of production (soap – animal fats and oils; soapless – petroleum products). (b) Scum formation. (c) Advantages and disadvantages: (i) biodegradable and non-biodegradable; (ii) pollution; (iii) irritants and nonirritants; and, (iv)	Explaining the cleaning actions of (scouring powders, detergents, rust removers, lime scale removers, oxidizing agents) on household appliances. Identifying the constituents of scouring powders and detergents, rust removers, lime scale removers, and oxidising agents. Explaining the different reactions of cleaning agents: abrasive and chemical action. Discussing the effects of detergents made by Al, Cu, Fe, Sn, Ag and Zn.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung Pg. 357, 359 Common household chemicals: hydrogen peroxide, bleach, vinegar etc. Samples of detergents e.g. soaps, tide pods, fabric softeners etc. Materials to make soap: beaker, Bunsen burner, stirring rod, tripod stand, water bath, sodium hydroxide, canola oil, ethanol, brine-concentrated salt water.	Oral Questioning 1. Give THREE differences between a soapy and a soapless detergent. Written Assessment Answers to past CSEC questions on detergents. Assessing the soap produced from the laboratory activity.

		production cost.	Observing samples of detergents. Defining soap and soapless detergents. Classifying samples of detergents as soap and soapless detergents. Differentiating between soap and soapless detergents. Discussing the advantages and disadvantages of soap and soapless detergents. Making soap in the lab. Answering and discussing the solutions to past CSEC questions on detergents.	Past CSEC Integrated Science questions on detergents.	
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Link	Video link on how detergent works: https://www.youtube.com/watch?v=F7-ie4uWX04				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 26
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Pollutants and the environment	Students will: Know the causes of air pollution. Understand the effects of air pollution on the respiratory system. Understand the importance of good community hygiene. Know the conditions that encourage the breeding of household pests and parasites.	Effects of air pollution. Effects: (a) health: allergies, lung cancer, asthma, other respiratory disorders, emphysema. (b) environmental: acid rain, blocking stomata in plants. Reference to allergies, second-hand smoke, ventilation, fossil fuel, and air masses. Importance of community hygiene to the environment. (a) types of waste: domestic, industrial, biological, chemical, and electronic waste. Bio-degradable and non-bio-degradable waste. (b) impact of improper waste disposal: (i) pollution of land and water (surface, ground and potable water); (ii) increase in pest population; (iii) prediction of their consequences; and, (iv) assessment of	Group presentation outlining the following: Defining air pollution. Identifying the causes of air pollution. Discussing the effects of air pollution (allergies, lung cancer, asthma, emphysema, acid rain and blocking stomata in plants). Reference to allergies, second-hand smoke, ventilation, fossil fuel, and air masses. Brainstorming the need for good community hygiene.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 156-158 Powerpoint presentation on air pollution/ charts on air pollution, laptop, and projector. Past CSEC Integrated Science questions on air pollution and household pests.	Oral Questioning 1. What is the main reason for practising good community hygiene? Assessing group presentation on air pollution. Written Assessment Answers to past CSEC questions on air pollution and household pests.

		the effects of unsanitary conditions on the spread of pathogenic microorganisms and parasites such as worms.	Creating posters to depict good community hygiene. Identifying the 5 types of waste. Differentiating between biodegradable and non-biodegradable waste. Outlining the impacts of proper disposal of waste, adequate toilet and sewage disposal facilities, garbage collection and disposal. Answering and discussing the solutions to past CSEC questions on air pollution and household pests.		
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Video Links	Video links on air pollution, what's in the air we breathe: https://www.youtube.com/watch?v=e6rglsLy1Ys&t=9s https://www.youtube.com/watch?v=xEodej_M7TI&t=89s

NATIONAL SCHEMES FOR SECONDARY SCHOOLS

Curriculum Area: Integrated Science **Grade**: 11

					WEEK 27
TOPIC/SUB-TOPIC	**GENERAL OBJECTIVE**	**CONTENT**	**ACTIVITY**	**RESOURCE**	**EVALUATION STRATEGY**
Pollutants and the environment	Students will: Students will understand the impact of solid waste on the environment.	(c) recommended practices: proper disposal of solid waste (refuse, reduce, reuse, repair, refill, repurpose, recycle), composting, biogas production, adequate toilet, and sewage disposal facilities (septic tanks, cesspools soak aways and sewage treatment plants), garbage collection and disposal. (d) benefits: prevention of infections, aesthetic value. Use of plastics. (a) advantages of using plastics: (i) ease of production (manufacture and costs); (ii) durability; and (iii) use of plastics in industry (medical, construction). (b) negative effects on the environment: (i) burning of plastics – release of toxic gases (dioxins) and respiratory illnesses; (ii) length of time taken to degrade; and (iii) microplastics	Giving examples of reduce, reuse, and recycle in daily life. Discussing in groups the impact of solid waste on the environment. Presenting the impacts of solid waste on the environment. Listing the advantages and disadvantages of using plastic. Discussing the negative effects of plastic on the environment. Stating the benefits of recycling. Answering and discussing the solutions to past CSEC questions on solid waste management.	Integrated Science for CSEC Examinations 3rd Edition by Tania Chung. Pg. 215-222 Presentation materials: cardboard, markers, pictures/powerpoint presentation, laptop, projector. Past CSEC Integrated Science questions on solid waste management	Oral Questioning 1. What is the difference between reduce, reuse and recycle? 2. Identify 2 advantages of using plastics. Written Assessment Answer to past CSEC questions on solid waste management.

		in the marine environment. (c) benefits of recycling.			
Additional Textbooks	A. Concise Revision Course CSEC Integrated Science by Anne Tindale, Peter DeFreitas & Shaun deSouza. B. Integrated Science for CSEC Examinations by Tania Chung. C. CXC Study Guide: Integrated Science for CSEC by Lawrie Ryan, Denise Hernadez, Bermadee McKenzie-Briscoe, Marsha Russel, and Victor Joseph.				
Video Links	Video links on solid waste management, land pollution, and plastic pollution: https://www.youtube.com/watch?v=9KMMwHjJ9R8 https://www.youtube.com/watch?v=ePPIy3L_cxA https://www.youtube.com/watch?v=HGxBRTV3ejo				