The Asian International School Curriculum Mapping

Grade: **9** (Intermediate) Subject: Physics School Year: 2018-2019

Month	# of Days	Core Standard	Strand	Topic	Content	Skills	Activities	Assessments
AUG.	8	PS.6.12E	Forces Affecting Motion Motion at the macroscopic level	ELECTRICITY AND ELECTRICAL CIRCUITS	Electrostatics	*Demonstrate and explain static electricity. *Calculate voltage, current, resistance, electric current and electrical charge. *Illustrate electric current charges. *Differentiate conductors and insulators *Set up simple circuits with basic electrical components.	➢ Audio Video Presentation ➢ Group Task: Electrostatics Activity (Charged and Not Charged) ➢ Laboratory Act: Conductor or Insulator	➢ Research Work Presentation: Application of Electrostatics ➢ Reflective Thinking: Significance of Electrostatics ➢ Writing laboratory reports.
		PS.3.4B			Theory of Static Electricity Conductor vs. Insulator Application of Electrostatics Currents and Circuits Measuring Current Series circuit		➢ Analyzing Circuit Diagrams ➢ Calculating current and Charge ➢ Interactive Simulation: a. https://phet.colorado.edu/en/simulation/legacy/electric-hockey	➢ Project: Building a Simple Circuit Model (using recycled materials) ➢ Making a graphite Circuit ➢ Illustrating Circuit Diagrams ➢ Tabulating the Differences of Series and Parallel Circuits. ➢ Creating a Model Chart of a Series and Parallel Circuits.
		PS.4.4A			Parallel Circuits			

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								➢ Quiz
SEPT.	8	PS.4.4A	Forces Affecting Motion Motion at the macroscopic level	ELECTRICITY AND ELECTRICAL CIRCUITS	Power Supplies and Voltage Voltage, Current, Resistance Measuring Resistance Controlling the Current Switches and Controls Logic Gates Electricity in the Home	*Use an ammeter and voltmeter. *Measure current, voltage and resistance. *Compare potential difference (voltage), electrical resistance and electrical power. *Interpret circuit diagrams. *Analyze current –voltage graphs. *Use logic gates to write truth tables *Illustrate circuit diagrams using the truth tables. *Analyze problems using logic gates.	➢ Laboratory Work: Measuring Current and Potential Difference ➢ Analyzing Current-Voltage Graphs ➢ Calculating Voltage, Current Resistance ➢ Analyzing Circuit Diagrams ➢ Writing Truth Tables Using Logic Gates Diagram ➢ Home Survey Presentation: Appliances Using the Mains and the Batteries ➢ Interactive: Simulation on Circuits a. https://phet.colo	➢ Tabulating: Electrical Components, Symbols and Functions ➢ Chart –Making: How a Switch Works ➢ Illustrating Logic Gates Using the Truth Tables ➢ Problem Solving: Voltage, Current, Resistance ➢ Writing Laboratory Reports ➢ Quiz

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							rado.edu/en/simulation/circuit-construction-kit-dc-virtual-lab	
OCT.	8	PS.4.4A	Forces Affecting Motion Motion at the macroscopic level	ELECTRICITY AND ELECTRICAL CIRCUITS	The Ring Main	* Describe the functions and descriptions of: live, earth, neutral wires, ring main *Identify the components of the ring main diagram *Illustrate two-way switching diagrams *Solve problems about electrical power, current in different appliances, energy used and cost.	➢ Audio Video Presentation	➢ Group Presentation: Safety Measures-Electricity at Home
					Lighting Circuits		➢ Home Survey Presentation: (light bulbs/two-way switching controlled bulbs/room switches)	➢ Writing a Reflection: Safety and Electricity ➢ Demonstration: Wiring a Plug ➢ Tabulating approximate time of appliances usage.
					Safety and Electricity		➢ Calculating Electrical Power and Current in Different Appliances ➢ Calculating Energy Used and Cost	➢ Problem Solving: Electrical Power, Energy Used ➢ Answering Unit Questions
					Wiring a Plug			
					Earthing			
					Paying for Electricty			
		PS.1.4F PS.6.4A	PROPERTIES OF MATTER	MAGNETISM AND ELECTRICITY	Magnetic Effects: Attraction and Repulsion	*Plot or sketch magnetic field pattern. *Demonstrate how to	➢ Laboratory Work: Mapping a Magnetic Field	➢ Illustrating Magnetic Fields ➢ Writing Laboratory

Month	# of Days	Core Standard	Strand	Topic	Content	Skills	Activities	Assessments
					A Theory for Magnetism	magnetize some objects. *Demonstrate Fleming's Left Hand Rule *Construct a model of a simple dc motor. *Describe ways of storing information using magnetism.	➢ Group Task: Plotting Magnetic Field Patterns ➢ Interactive Simulations: a. https://phet.colorado.edu/en/simulation/charges-and-fields b. https://phet.colorado.edu/en/simulation/balloons-and-static-electricity	Reports ➢ Quiz
NOV.	8	PS.1.4F PS.6.4A	PROPERTIES OF MATTER	MAGNETISM AND ELECTRICITY	Electromagnetic Induction Electric Current and Magnetism Using Electromagnets Magnetism, Current and Forces Electric Motors		➢ Laboratory Work: a. Magnetic Effect of Electricity b. Demagnetizing and Magnetizing Iron Nails ➢ Making a Solenoid ➢ Research: Applications of Electromagnets ➢ Illustrating Diagrams:	➢ Project: A Solenoid Motor ➢ Demonstration: Dynamo Effect

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Month	# of Days	Core Standard	Strand	Topic	Content	Skills	Activities	Assessments
					The Motor Effect Storing Information Using Electromagnetism Magnetic Field		Direction of Force, Magnetic Field and Current ➢ Demonstrating Fleming's Left Hand Rule	➢ Unit Questions
DEC.	4	PS.3.4A PS.4.8A	Changes in Matter Energy Transfer and Conservation	ENERGY, WORK AND FUELS	Work and Energy	*Illustrate formation of fossil fuels. *Summarize advantages and disadvantages of using fossil fuels. *Describing ways of conserving energy. *Build a Model *Solve problems (Work done and Energy used)	➢ Calculating Work Done and Energy Used ➢ Laboratory Work: Potential and Kinetic Energy	➢ Reflective Thinking: Conservation of Energy ➢ Chart Making: Conservation of Energy ➢ Problem Solving: Work Done and Energy Used ➢ Writing a Reflection: Nutrition Value Tables
		PS.4.8D PS.1.8B			Conservation of Energy Energy from Fuels		➢ Concept Mapping : Common Fuels ➢ Analyzing Nutrition Value Tables ➢ Interactive Simulation:	

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							a. https://phet.colorado.edu/en/simulation/legacy/energy-forms-and-changes	
JAN.	8	PS.4.8D PS.1.8B	Changes in Matter Energy Transfer and Conservation	ENERGY, WORK AND FUELS	Formation of Coal Other Fossil Fuels Fuel and Other Things From Oil		➢ Making Diagrams: Formation of Coal ➢ Group Task: Coal Formation Activity ➢ Research: Carboniferous Period ➢ Laboratory Work: Formation of Coal	➢ Building a Model: Formation of Oil and natural Gas ➢ Demonstration/Simulation/ Role Play: Formation of Coal
		ESS.2.8A			Burning Fossil Fuels- A Problem How Long Fossil Fuels Last	*Predict how long fossil fuels last on Earth. *State the importance of conserving energy *Elaborate new energy sources	➢ Elaborating Advantages and Disadvantages of Using Fossil Fuels ➢ Illustrating Green House Effect ➢ Tabulating	➢ Presentation of Research Work ➢ Writing a Reflection: How can we lessen pollution? ➢ Making a Poster: How Fossil Fuels are Converted

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Month	# of Days	Core Standard	Strand	Topic	Content	Skills	Activities	Assessments
							Causes and Effect of Global Warming and Acid Rain ➢ Research: Impact of Global Warming in Vietnam ➢ Interactive Simulation: a. https://phet.colorado.edu/en/simulation/legacy/greenhouse ➢ Chart Making: Conservation of Energy	into Electricity
		PS.4.8A PS.4.8C			Other Sources of Energy		➢ Concept Mapping: Renewable and Non Renewable Energy	➢ Reflective Thinking: How can we conserve energy? ➢ Writing Laboratory Reports ➢ Presentation of Research Work
					Renewable Energy Sources More Alternative Energy Sources		➢ Research: Renewable Energy Sources in Vietnam	

Month	# of Days	Core Standard	Strand	Topic	Content	Skills	Activities	Assessments
					Energy from Living Things		➢ Laboratory Activity: Making Ethanol a. https://www.leaf.tv/articles/how-to-make-ethanol-from-sugar-cane/ b. http://www.instructables.com/id/How-to-Make-Bio-ethanol-From-Regular-Sugar/ ➢ Group Activity: Energy from Biological Waste (Physics First , p.48)	➢ Unit Questions
FEB.	4	PS.3.4C PS.4.8B	Energy	OSCILLATIONS AND WAVES	Oscillation More Oscillators	*Give examples of oscillations in real world. *Calculate frequency and period. *Identify rarefaction and compression of a sound wave. *Solve problems.	➢ Laboratory Work: Simple Pendulum ➢ Calculating Frequency and Period of Oscillations ➢ Investigating Oscillators	➢ Making a Model of Sound Waves ➢ Writing Laboratory Reports

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Month	# of Days	Core Standard	Strand	Topic	Content	Skills	Activities	Assessments
		PS.3.8C			Sound as a Wave Speed and Sound		➢ Calculating Speed of Sound ➢ Tabulating Characteristics of a Sound Wave ➢ Research: Ultrasound ➢ Interactive Simulation: a. https://phet.colorado.edu/en/simulation/wave-on-a-string	➢ Design and carry out simple experiments to prove sound can travel through gases, solids and liquids. ➢ Problem Solving: Speed of Sound ➢ Presentation of Research
MAR.	8	PS.3.4C	Energy	OSCILLATIONS AND WAVES	Music and Sound Waves Vibrating Strings	*Differentiate sound waves from electromagnetic waves. *Distinguish the significance of electromagnetic waves. *Demonstrate how umbra and penumbra is formed. *Use diagram to explain reflection. *Discuss law of reflection	➢ Classifying Musical Instruments ➢ Comparing: Frequency and Pitch ➢ Illustrating Vibrations on a String ➢ Investigating Vibrations in a stretched wire.	➢ Project: a. Newton's Disc b. Soundproof Box https://www.youtube.com/watch?v=iFSIgXyJdJs

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Month	# of Days	Core Standard	Strand	Topic	Content	Skills	Activities	Assessments
						*Design a project. *Compare different electromagnetic waves according to wavelength and frequency.	➢ Laboratory Work: Tuning Fork Labs	
		PS.3.8D			Electromagnetic Waves		➢ Comparing and Contrasting Electromagnetic Waves and Sound Waves ➢ Calculating Speed of Light ➢ Describing the Electromagnetic Spectrum ➢ Group Activity: Dispersion of White Light	➢ Demonstration: a. Light on Transparent and Opaque Objects b. Dispersion of White Light ➢ Illustrating Diagrams: a. Angle of Incidence and Angle of Reflection b. Apparent Depth c. Total Internal Reflection ➢ Project: Periscope ➢ Problem Solving: Apparent Depth
		PS.3.4D			The Nature of Light		➢ Making a chart: Luminous and Non Luminous Objects	➢ Illustrating Images formed in Concave and Convex Lenses

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					Reflection of Light Refraction in Lenses		➢ Calculating Apparent Depth	➢ Writing Laboratory Reports
APR.	4				Images and Lenses		➢ Describing Lenses and Images Formed ➢ Laboratory Work: Images Formed in a Concave Lens ➢ Research: Fiber Optics	➢ Presentation of Research Work a. Application of Lenses b. Using TIR
					Using Lenses		➢ Classifying Lenses ➢ Group Activity: Comparing Images	
		PS.3.8D PS.4.8C			Coloured Light		➢ Audio Video Presentation: How do Eyes See Colors ➢ Interactive Simulation: https://phet.colorado.edu/en/simulation/color-vision	

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					Looking at Coloured Objects			
MAY	8	ESS.2.9B ESS.2.8B	History of the Earth Properties of Earth's Materials Tectonics	INSIDE PALNET EARTH	How Old is the Earth The Rock Cycle Sedimentary Rocks Igneous Rocks	*Describe the three man layers of the Earth. *Describe the formation of igneous, sedimentary and metamorphic rocks. *Explain the theory of plate tectonics. *Illustrate the rock cycle *Build a model	➢ Audio Video Presentation: How Old is the Earth? ➢ Illustrating the Rock Cycle ➢ Describing Each Type of Rock Formation ➢ Research: Sites of Rock formations in Vietnam ➢ Laboratory Work: Rocks ➢ Interactive Simulation: https://phet.colorado.edu/en/simulation/legacy/radioactive-dating-game	➢ Project: Rock Cycle Diorama ➢ Demonstration: How each type of Rock Formation is formed ➢ Presentation of Research Work (Rock Formations in Vietnam)
		ESS.2.9A			Metamorphic Rocks The Rock Cycle is Complete		➢ Audio Video Presentation - Documentary a. Tectonic	➢ Building a Model: Joints and Fault ➢ Demonstration:

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					Tectonic Processes		Plates b. The Pacific Ring of Fire	a. Normal Fault b. Sliding or Tear Fault
		ESS.4.9A PS.4.8B ESS.2.8A ESS.4.8A ESS.4.12A			Joints and Faults Earthquakes Plate Tectonics		➢ Differentiating joints and faults ➢ Research: a. Devastating Earthquakes in the World b. Earthquakes in Vietnam ➢ Interactive Simulations: https://phet.colorado.edu/en/simulation/legacy/plate-tectonics	➢ Presentation: Safety Measures during an Earthquake ➢ Reflective Thinking: Earthquakes ➢ Poster Making: a. What to do During an Earthquake b. The Ring of fire