International School-Al Quoz-Dubai
Science Department
Curriculum Annual Plan
Grade: 12 Subject: Honors Physics 2024-2025

TERM-I

PE Code	DCIs	Unit	Topic	Learning Objectives	Week No. & Date	No. of Lessons
			QUARTER- I			
(Orientation week)	Introduction: Scientific Notation SI Units	Chapter 1	SI Units Graphs (Diagnostic Test)	• Use scientific notation to express large and small numbers. • Relate the SI unit with physical quantities.	Week 1 26/08/2024 30/08/2024	4
HS-PS2-6 EmSAT part 4	Attraction and repulsion between electric charges at the atomic scale explain the structure, properties, and transformations of matter, as well as the contact forces between material objects.	Chapter 16 Electric forces and fields (P.213 - 219)	Electric Charge	• Understand the basic properties of electric charge. • Differentiate between conductors and insulators. • Distinguish between charging by contact, by induction, and by polarization.	Week 2 02-06/09/2024	4
HS-PS2-4 EmSAT part 4	Forces at a distance are explained by fields (gravitational, electric, and magnetic) permeating space that can transfer energy through space.	Chapter 16 Electric forces and fields (P.213 - 219)	Electric Force	• Calculate electric force using Coulomb's law. • Compare electric force with gravitational force. • Apply the superposition principle to find the resultant force on a charge and to find the position at which the net force on a charge is zero.	Week 3 09-13/09/2024	4
HS-PS2-4	Magnets or electric currents cause magnetic fields; electric charges	Chapter 16	Electric Field	• Calculate electric field strength. • Draw and interpret electric field lines.	Week 4: 16-20/09/2024	4

EmSAT part 4	or changing magnetic fields cause electric fields.	Electric forces and fields (P.213 - 219)		• Identify the four properties associated with a conductor in electrostatic equilibrium.		
HS-PS4-5 EmSAT part 5	Multiple technologies based on the understanding of waves and their interactions with matter are part of everyday experiences in the modern world (e.g., medical imaging, communications, scanners) and in scientific research. They are essential tools for producing, transmitting, and capturing signals and for storing and interpreting the information contained in them.	Chapter 18	Electric Circuits	• Interpret and construct circuit diagrams. • Identify circuits as open or closed. • Deduce the potential difference across the circuit load, given the potential difference across the battery's terminals.	Week 5: 23-27/09/2024	4
HS-PS4-5 EmSAT part 5	Multiple technologies based on the understanding of waves and their interactions with matter are part of everyday experiences in the modern world (e.g.,	Chapter 18	Resistors in Series or in Parallel	• Calculate the equivalent resistance for a circuit of resistors in series and find the current in and potential difference across each resistor in the circuit.	Week 6: 30-04/10/2024	4

	medical imaging, communications, scanners) and in scientific research. They are essential tools for producing, transmitting, and capturing signals and for storing and interpreting the information contained in them.					
HS-PS4-5 EmSAT part 5	Multiple technologies based on the understanding of waves and their interactions with matter are part of everyday experiences in the modern world (e.g., medical imaging, communications, scanners) and in scientific research. They are essential tools for producing, transmitting, and capturing signals and for storing and interpreting the information contained in them.	Chapter 18	Complex Resistor Combinations	• Calculate the equivalent resistance for a complex circuit involving both series and parallel portions. • Calculate the current in and potential difference across individual elements within a complex circuit using Ohm's law. • Calculate the equivalent resistance for a complex circuit involving both series and parallel portions. • Calculate the current in and potential difference across individual elements within a complex circuit using Ohm's law.	Week 7: 07-11/10/2024 Week 8: 14-18/10/2024	4 4

HS-PS4-5 EmSAT part 5	Multiple technologies based on the understanding of waves and their interactions with matter are part of everyday experiences in the modern world (e.g., medical imaging, communications, scanners) and in scientific research. They are essential tools for producing, transmitting, and capturing signals and for storing and interpreting the information contained in them.	Chapter 18	Complex Resistor Combinations	• Calculate the current in and potential difference across individual elements within a complex circuit using Kirchhoff's rules.	Week 9: 21-25/10/2024	
				End of quarter 1 and beginning of quarter 2		
HS-PS2-5 EmSAT part 5	Forces at a distance are explained by fields (gravitational, electric, and magnetic) permeating space that can transfer energy through space. Magnets or electric currents cause magnetic fields; electric charges or changing magnetic fields cause electric fields.	Chapter 19	Magnetism Magnetic field	• For given situations, predict whether magnets will repel or attract each other. • Describe the magnetic field around a permanent magnet. • Describe the orientation of Earth's magnetic field.	Week 10: 28/10/2024 31/10/2024	4

HS-PS2-5 EmSAT part 5	Forces at a distance are explained by fields (gravitational, electric, and magnetic) permeating space that can transfer energy through space. Magnets or electric currents cause magnetic fields; electric charges or changing magnetic fields cause electric fields.	Chapter 19	Magnetism from Electricity (p.258)	• Describe the magnetic field produced by current in a straight conductor and in a solenoid. • Use the right-hand rule to determine the direction of the magnetic field in a current-carrying wire.	Week 11: 05-08/11/2024	4
HS-PS2-5 EmSAT part 5	Forces at a distance are explained by fields (gravitational, electric, and magnetic) permeating space that can transfer energy through space. Magnets or electric currents cause magnetic fields; electric charges or changing magnetic fields cause electric fields.	Chapter 19	Magnetic Force (p.259)	• Given the force on a charge in a magnetic field, determine the strength of the magnetic field. • Use the right-hand rule to find the direction of the force on a charge moving through a magnetic field. • Determine the magnitude and direction of the force on a wire carrying current in a magnetic field.	Week 12: 11-15/11/2024	4

HS-PS2-5 EmSAT part 5	Forces at a distance are explained by fields (gravitational, electric, and magnetic) permeating space that can transfer energy through space. Magnets or electric	Chapter 20	Electromagnetic induction. Electricity from Magnetism (P.268)	• Recognize that relative motion between a conductor and a magnetic field induces an emf in the conductor. • Describe how the change in the number of magnetic field lines through a circuit loop affects the magnitude and direction of the induced electric current.	Week 13: 18-22/11/2024	4

	currents cause magnetic fields; electric charges or changing magnetic fields cause electric fields.					
HS-PS2-5 EmSAT part 5	Forces at a distance are explained by fields (gravitational, electric, and magnetic) permeating space that can transfer energy through space. Magnets or electric currents cause magnetic fields; electric charges or changing magnetic fields cause electric fields.	Chapter 20	Electricity from Magnetism Electromagnetic induction. (P.268)	• Apply Lenz's law and Faraday's law of induction to solve problems involving induced emf and current.	Week 14: 25/11/2024 28/12/2024	4
EmSAT Part 4	Forces at a distance are explained by fields (gravitational, electric, and magnetic) permeating space that can transfer energy through space. Magnets or electric currents cause magnetic fields; electric charges or changing magnetic fields cause electric fields.	Chapter 20	Electromagnetic induction. Electricity from Magnetism (P.268)	• Recognize that relative motion between a conductor and a magnetic field induces an emf in the conductor. • Describe how the change in the number of magnetic field lines through a circuit loop affects the magnitude and direction of the induced electric current.	Week 15: 04-06/12/2024	3
EmSAT Part 4	Forces at a distance are explained by fields	Chapter 20	Electricity from Magnetism	Apply Lenz's law and Faraday's law of induction to solve problems involving induced emf and current.	Week 16: 09-13/12/2024	4

	(gravitational, electric, and magnetic) permeating space that can transfer energy through space. Magnets or electric currents cause magnetic fields; electric charges or changing magnetic fields cause electric fields.		Electromagnetic induction. (P.268)			
				Winter Break	**16-05/01/2025**	
HS-PS3-1 EmSAT part 2	Newtonian gravitational laws governing orbital motions, which apply to human-made satellites as well as planets and moons.	Chapter 5	Circular Motion (p61 - 64)	• Solve problems involving centripetal acceleration. Explain how the apparent existence of an outward force in circular motion can be explained as inertia resisting the centripetal force. • Explain how Newton's law of universal gravitation accounts for various phenomena, including satellite and planetary orbits, falling objects, and the tides. • Apply Newton's law of universal gravitation to solve problems.	Week 17: 06-08/01/2025	3
				Revision and Exams Days **09 Jan to 22 Jan.**		
HS-PS3-3 EmSAT part 2	Objects move in a circular path when there is a centrally directed force. The concept of circular motion helps to	Chapter 5	Torque	• Distinguish between torque and force. • Calculate the magnitude of the torque on an object.	Week 20 27/01/2025 31/01/2025	4

	explain phenomena such as orbital motion or torque.					
END OF QUARTER-II						