

**IMMACULATE CONCEPTION HIGH SCHOOL
PHYSICS SYLLABUS SEQUENCE 2024 / 2025
Grade 9
Christmas Term**

WEEK:	DATE	TOPICS	OBJECTIVES	SUGGESTED ACTIVITIES
1	Sept. 2 – 6	ORIENTATION / Introduction to Subject		
2	Sept. 9 - 13	Physical Quantities and units	<ol style="list-style-type: none"> 1. State five of the fundamental quantities. <ul style="list-style-type: none"> - Mass, length, time, temperature, Electric current 2. Recall S.I. units and symbols of fundamental quantities. 3. Explain why an S.I. system is needed. 4. Define derived quantities and state examples. 	Practice Measurement Worksheets
	Measurement	<ol style="list-style-type: none"> 5. Use standard form and prefixes (micro, milli, centi, kilo, Mega,) 6. Convert units of mass and length (micro, milli, centi, kilo, Mega) 		
	Measurement	<ol style="list-style-type: none"> 7. Limit the number of significant figures and decimal places in a final answer 8. Discuss accuracy, precision, sensitivity, smallest division and range 		
3	Sept. 16 - 20	Measurement and Scales	<ol style="list-style-type: none"> 1. Compare linear and nonlinear scales stating examples 2. Compare analogue and digital scales stating examples 	<p>Students may be asked to use the different instruments to measure the mass, external diameter and internal diameter of different objects (eg an egg, a weight, etc)</p> <p>They may also use the following simulations:</p>
	Measurement and Scales	<ol style="list-style-type: none"> 1a. Measuring Instruments <ul style="list-style-type: none"> (i) Vernier caliper (ii) Micrometer Screw Gauge - their use 		

			<ul style="list-style-type: none"> - read the scale on the instrument - identify the smallest division 	Micrometer Model (iwant2study.org)
		Errors	<p>1b. Measuring Instruments (iii) Triple Beam Balance</p> <ul style="list-style-type: none"> - its use - read the scale on the instrument - identify the smallest division - precautions <p>2. Identify the smallest division and range on a given scale</p> <p>3. Discuss types of errors (Random and Systematic)</p>	Vernier Calipers (Simulator) : Class 11 : Physics : Amrita Online Lab (olabs.edu.in) Reading a Triple Beam Balance - Wisc-Online OER
				Coursework 1 Physical Quantities and Measurement
4	Sept. 23 - 27	Area	<p>Area (Review)</p> <ol style="list-style-type: none"> 1. Define area and use formulae to find the area of basic regular shapes. 2. Use a grid to estimate the area of an irregular shape. 3. Convert between units of area. 	<p>Students may use the grid method to estimate the area of different things such as:</p> <ul style="list-style-type: none"> ● A leaf ● One foot ● Pictures of irregular shapes <p>Student will be assigned homework on volume. They be required to make notes on volume of regular solids and instruments used to measure the volume of liquids. They will also be asked to explore how they would find the volume of an irregular solid.</p>

		Volume Density	Volume Find the volume of an irregular solid using the displacement methods (measuring cylinder and eureka can). Density Define density. Use the density formula and be able to transpose it when necessary.	Students may be asked to find the volume of various irregular solids. Density Practice Worksheet
5	Sept. 30 - Oct. 4	Density	Conduct an experiment to find the density of water.	
		Graphs	Return and Review Coursework Graphs <ol style="list-style-type: none"> 1. Definition 2. Graphs as a means of presenting data 3. Review criteria (title, labels, types of plotted points, scale of axes) 	
		Graphs	Graphs <ol style="list-style-type: none"> 1. Best fit line 2. Straight lines and curves 3. Gradient & intercepts 4. Extrapolation of data 	
6	Oct. 7 - 11		Graph Revision	
				Coursework 2 Graphs
		Electricity	Static Electricity <ol style="list-style-type: none"> 1. Definition of static electricity 2. State the origin of charges in objects. 3. Production of static electricity <ul style="list-style-type: none"> - friction - induction 4. Examples 	

7	Oct. 14 - 18	Electricity	<p align="center">Static Electricity</p> <ol style="list-style-type: none"> Application to life Hazards associated with static electricity 	
		Electricity	<p>Current electricity</p> <ol style="list-style-type: none"> Define current electricity – comparison with static electricity State that electrons are responsible for the flow of current electricity in metals Classification of substances as insulators and conductors of electricity Definition of current & voltage Relationship between voltage and current, resistance in a circuit. - Use formula: $V=IR$ 	
			Review Course work and topics for test	
8	Oct. 21 - 25			<p align="center">STANDARDIZED TEST 1</p> <p align="center">Based on material covered thus far</p>
9	Oct. 28 - Nov. 1	Electricity	<p>Current electricity</p> <ol style="list-style-type: none"> Define electric Charge. - Use the formula $Q = I t$ Definition of a circuit Components of the circuit and their symbols. Focus on the following: cell, battery, bulb/lamp, ammeter, voltmeter, open switch, closed switch, resistor, fuse Identify the direction of electric current flow in a circuit (+ve to -ve) [conventional current] Identify the direction of electron flow (-ve to +ve) 	<p>The following link may be used to construct circuits.</p> <p>https://phet.colorado.edu/sims/html/circuit-construction-kit-dc/latest/circuit-construction-kit-dc_all.html</p>

		Electricity	<p>Current electricity</p> <p>6. Use of the voltmeter, ammeter and resistors in a circuit -How current and voltage varies in the components of the circuit.</p> <p>7. Differences between series and parallel circuits</p>	
		Electricity	Practice Calculation Questions	
10	Nov. 4 - 8			Coursework 3
		Electricity	<p>Electricity in the Home</p> <ul style="list-style-type: none"> • Series and parallel circuits in the home • Safety devices used in circuits (fuse + circuit breakers) • Electrical safety rules • Electrical hazards 	
			Review Six-weekly Test	
11	Nov. 11 - 15	Magnetism	<p>Magnetism</p> <ul style="list-style-type: none"> • Properties of the magnet • Magnetic field and magnetic field lines • Draw field lines around a single bar magnet and between the poles of two separate magnets. 	<ul style="list-style-type: none"> - Identify magnetic and non-magnetic materials - Use iron fillings to observe field lines around a single bar magnet. - Induce magnetism on a paper clip
		Magnetism	<p>Magnetism</p> <ul style="list-style-type: none"> • Construction of an electromagnet • Conduct experiments using magnets. • Construct a simple compass • Construct an electromagnet 	

			<p>Thermal Physics</p> <ul style="list-style-type: none"> Recall that temperature determines the direction of thermal energy transfer. Investigate physical properties which vary with temperature. 	<ul style="list-style-type: none"> Finger-meter experiment https://docs.google.com/document/d/1_kWrWAYfSTCehqSt2WPc23yBebuyPnSMvfUsHmhzmss/edit?usp=sharing Observe that the volume of gases/liquids/solids expand when heated
12	Nov. 18 - 22		<p>Thermal Physics</p> <p>Compare the transfer of thermal energy by conduction, convection and radiation</p> <ul style="list-style-type: none"> Investigate the absorption and emission of thermal energy by materials Construct a device that utilizes the principles of thermal energy transfer 	
13	Nov. 25 - 29		Review Course work and topics for test	
			Review topics for test	
			Review topics for test	
14	Dec. 2 - 6			STANDARDIZED TEST 2
15	Dec. 9 - 13		Conduct experiments	
			Conduct experiments	
			Return and review test	
16	Dec. 16 - 17		Dec 17 : Last Day END OF TERM	