

Ascot High School

Science Department

UNIT PLAN September - December, 2025 Grade 10 - Physics

Duration	Topic	Sub-topic	Specific Objectives	Assignments/Projects & Due Dates
<i>Orientation Activities & Diagnostic Test (September 1- 12)</i>				
Sept. 15-Oct 10	Mechanics	<ul style="list-style-type: none">Galileo	<p>Students should be able to:</p> <ul style="list-style-type: none">Discuss how the methodology employed by Galileo contributed to the development of Physics.	<p>Research Project and Class Discussion</p> <p>Sept. 19, 2025</p>
		<ul style="list-style-type: none">Measurement	<ul style="list-style-type: none">Express the result of a measurement or calculation to an appropriate number of significant figures.Discuss possible types and sources of error in any measurement. <p><u>Video Links:</u></p> <p>https://www.youtube.com/watch?v=huDRfgbc1HA</p> <p>https://www.youtube.com/watch?v=evIa9edpJ6k</p> <p>https://www.youtube.com/watch?v=DBDl6OOxyck&t=83s</p> <p>-Include those made with digital instruments and ways of reducing errors.</p> <ul style="list-style-type: none">Use a variety of instruments to measure different quantities.	<p>Worksheet on Significant figures.</p> <p>Tabulate the differences between the sources of errors.</p>

			<p>-Measurement should include</p> <ol style="list-style-type: none"> 1. Length-rulers, vernier calipers, micrometer screw guage; units 2. Mass- balances; units 3. Time-clocks, stop clocks or watches; units 4. Volume-measuring cylinder;units <p><u>Video Links</u> https://www.youtube.com/watch?v=2wuHY6RwnEo https://www.youtube.com/watch?v=zz-cVbstGo0</p> <ul style="list-style-type: none"> • Assess the suitability of instruments on the basis of sensitivity, accuracy and range. <p>-Similar instruments should be compared in the discussion.</p> <ul style="list-style-type: none"> • Apply the formula for density: $\rho = m/v$ <p>-Deduce units.</p>	<p>Practical Activity</p> <p>Determine the density of regular and irregular solids and a liquid.</p> <p>Quiz on Measurement (10%)- Sept.30, 2025</p>
		<ul style="list-style-type: none"> • Simple Pendulum 	<ul style="list-style-type: none"> • Investigate the factors which might affect the period of a simple pendulum. <p>-Restrict factors to length of string, mass of bob, angle of displacement.</p> <p><u>Video Links:</u> https://www.youtube.com/watch?v=02w9ISii_Hs</p>	<p>Practical Activity</p> <p>Take readings of the period for the variation of the different factors.</p>

			https://www.youtube.com/watch?v=fnvGVsxPuLs <ul style="list-style-type: none"> Plotting Graphs Use graphs of experimental data from simple pendulum. -Use \bigcirc or X to denote plotted points. Draw a line of “best fit” for a set of plotted value -Reasons why “best fit” line is the “best” average of the data. Determine the gradient of the straight line graph. -Use a triangle that covers at least half of the “best fit” line 	<p>Practice Plotting Graphs based on criteria and data given.</p> <p>Classwork (10%) Worksheet on plotting graphs and drawing line of best fit and calculating gradient</p>
Oct.13-24	Mechanics	<ul style="list-style-type: none"> Vectors 	<ul style="list-style-type: none"> Distinguish between scalars and vectors and give examples of each. -Everyday examples for each type, for example, movement of a hurricane as vector. Mass of objects as scalar. <p><u>Video Link:</u> https://www.youtube.com/watch?v=iLB_4Wu2QOg</p> <ul style="list-style-type: none"> Use scale diagrams to find the resultant of two vectors. -Oblique vectors included. Calculate the resultant of vectors which are parallel, antiparallel and perpendicular. -Limit calculations to four or less vectors. Explain that a single vector is equivalent to two other vectors at right angles. 	

			<p>-Everyday examples of motion and force, for example velocity of a ball thrown through the air.</p>	<p>Worksheet on Vectors (10%)</p> <p>Oct.24, 2025</p>
<p><i>MID-TERM BREAK & NATIONAL HEROES DAY</i></p> <p><i>SESSIONAL TEST ONE (20%)</i></p>				
Nov.3-14	Mechanics	<ul style="list-style-type: none"> • Statics <p>-Forces (F)</p>	<ul style="list-style-type: none"> • Explain the effects of forces. <p>-A force can cause a change in the size, shape or motion of a body.</p> <ul style="list-style-type: none"> • Identify types of forces. <p>-Situations in which electric, magnetic, nuclear or gravitational forces act.</p> <p><u>Video Links</u></p> <p>https://www.youtube.com/watch?v=7_Uo7RufH4c</p> <ul style="list-style-type: none"> • Determine the weight of objects. <p>-Weight = mg</p> <p>On earth, $g=10\text{Nkg}^{-1}$</p> <p>$\text{Nkg}^{-1}=\text{ms}^{-2}$</p> <ul style="list-style-type: none"> • Show how derived quantities and their related units are produced. 	<p>.</p> <p>Practical Activity</p> <p>Use magnets, falling objects.</p> <p>Static Electricity</p> <p>Measure mass and weight for different objects.</p> <p>Plot a graph of weight vs mass. Determine the gradient.</p>

			<p>-Note how unit p may be derived by multiplying and dividing fundamental quantities and their units; From the definition of the quantity, for example: $N = kgms^{-2}$</p> <ul style="list-style-type: none"> Recall the special names given to the units for some derived quantities. $Kgms^{-2} = N$ Express derived units using the index notation. <p>-Conversion of units for given quantities into base units.</p> <ul style="list-style-type: none"> Identify situations in which the application of a force will result in a turning effect. <p>-Situations that are relevant to everyday life, for example, opening a door, sitting on a 'seasaw' using a spanner.</p>	Worksheet on Forces (10%)-Nov.17, 2025
Nov. 17-28	Mechanics	Turning Forces	<ul style="list-style-type: none"> Define the moment of a force, T. <p>-Moment units of Nm. Note that Nm is not equivalent to a joule.</p> <ul style="list-style-type: none"> Apply the principle of moments. <p>-Oblique forces are excluded. Use of instruments to indicate the magnitude of the forces in equilibrium.</p> <ul style="list-style-type: none"> Explain the action of common tools and devices as levers. <p>-Identification of load, effort and fulcrum for each device and tool in use.</p> <p>https://www.youtube.com/watch?v=fzljPiPy9nw</p>	Research and Presentation

			<ul style="list-style-type: none"> Determine the location of the centre of gravity of a body. <p>-Centre of gravity of a variety of regular and irregular shaped solids including lamina.</p> <ul style="list-style-type: none"> Relate the stability of an object to the position of its centre of gravity and its weight. <p>-The orientation of an object can change the position or height of its centre of gravity and affect its stability.</p> <p>Review Video: https://www.youtube.com/watch?v=Vka0HPEppA&t=1498s</p>	<p>Practical Activity: Finding the Centre of Gravity</p> <p>Worksheet on Turning Forces (10%)- December 1, 2025</p>
<p align="center">REVISION & END OF YEAR EXAMINATION December 1-16</p>				

