



Sequence					
TOPIC (S) Mechanics	1. Scalars and Vectors 2. Moments 3. Motion along a straight line 4. Determination of g by a free fall method required practical	5. Projectile Motion 6. Newton’s Laws of Motion 7. Momentum 8. Work, energy and power 9. Conservation of energy	10. Bulk Properties of Solids 11. Young’s Modulus 12. Determination of Young’s Modulus by a simple method		
Knowledge & Skills development	<ul style="list-style-type: none"> Resolution of vectors into two components at right angles to each other. Conditions for equilibrium for two or three coplanar forces acting at a point. Definitions of moments, couples and centre of mass Representation by graphical methods of uniform and non-uniform acceleration Significance of areas of velocity–time and acceleration–time graphs and gradients of displacement–time and velocity–time graphs for uniform and non-uniform acceleration Calculations using the equation of uniform motion Independent effect of motion in horizontal and vertical directions of a uniform gravitational field. Qualitative understanding of the effect of air resistance on the trajectory of a projectile and on the factors that affect the maximum speed of a vehicle (including terminal velocity) Knowledge and application of the three laws of motion in appropriate situations. 			<ul style="list-style-type: none"> Explanation and calculation involving the conservation of linear momentum Impulse calculations and relating this to vehicle safety Appreciation of momentum conservation issues in the context of ethical transport design Calculations involving work, power, efficiency gravitational potential energy and kinetic energy Definitions and calculations involving density, elastic limit and Hooke’s Law, tensile stress and tensile strain Description of plastic behaviour, fracture and brittle behaviour linked to force–extension graphs. Quantitative and qualitative application of energy conservation to examples involving elastic strain energy and energy to deform. Use of stress–strain graphs to find the Young modulus 	
Assessment / Feedback Opportunities	Exam questions – teacher assessed	Exam questions – self assessed	Extended writing task – teacher assessed	Deep marking of required practical in lab books	Topic assessment
Cultural Capital	<ul style="list-style-type: none"> 				
SMSC / Promoting British Values (Democracy, Liberty, Rule of Law, Tolerance & Respect)	<ul style="list-style-type: none"> 				
Reading opportunities	<ul style="list-style-type: none"> Recommended Read: Understanding the Magic of the Bicycle (IOP Concise Physics) – 1 Jan 2017 by Joseph W Connolly (Author) 				

Key Vocabulary	<p>Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest, Absolute, Uncertainty, Error</p> <p>Scalar, Vector, Component, Resolve, Moment, Equilibrium, Pivot, Displacement, Distance, Speed, Velocity, Acceleration, Projectile, Inertia, Magnitude, Momentum, Impulse, Work, Power, Efficiency, Conservation, Density, Brittle, Elastic, Plastic, Tensile, Stress, Strain, Quantitative, Qualitative</p>
Digital Literacy	<p>The use of excel to plot graphs and analyse data</p> <p>MSoftware365 apps including SharePoint</p>
Cross-Curricular Links	<p>Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators</p> <p>Engineering</p>
Careers	<p>All forms of engineering, sports science and analysis</p>