

Physics 1

Islip Manor High School

Scheme of Learning Overview



This scheme of learning has been designed to ensure that you make progress, develop, and master key knowledge, skills, and ideas through academically rich content that reflects, values, and celebrates the diverse experiences, identities, and contributions of our school community.

Year group: 7	Term: Autumn	Unit duration: 3-4 weeks	Number of lessons: 6		Unit title: Forces
Unit assessment: End of Topic test				Fertile question: Is it possible for a person's weight to triple in 1 day?	
Key skills/ concepts/ prior knowledge that students should have when starting this unit:				Start RAG	End RAG
1. The force of gravity pulls object to the Earth 2. Friction, air resistance, and water resistance slow down moving objects 3. Recognise that some simple machines including levers, pulleys and gears allow a smaller force to have a greater effect.					
Key skills/concepts/knowledge that students should cover				Start RAG	End RAG
1. What Forces Do – Explain that forces can change shape, speed, or direction. 2. Interaction Pairs – Describe that forces act in equal and opposite pairs. 3. Deformation – Explain how forces stretch, squash, or bend objects. 4. Support Force – Describe how solid surfaces push up to support objects. 5. Hooke's Law – State that extension is proportional to the force applied (within limits). 6. Friction and Drag – Describe effects of friction and drag on moving objects. 7. Causes of Drag and Friction – Explain why these forces arise. 8. Gravity – Describe gravitational effects on Earth and in space.					
				Literacy. Key vocabulary/subject terminology that students should cover: push, pull, contact, non-contact, interaction pair, Newton meter, weight, Newton(N), deform, compress, reaction, extension, tension, elastic limit, Hooke's law, friction, lubrication, water resistance, air resistance, drag forces, streamlined, gravity, magnetic, electrostatic, field, mass, weight, kilograms(kg), gravitational field strength, balanced, equilibrium, unbalanced, Suggested materials teachers could/should use: KS3 Activate 1 Key home learning tasks students should complete:	

9. Balanced and Unbalanced Forces – Explain how they affect motion and equilibrium.			
10. Changing Motion – Explain why an object's speed or direction can change when forces are unbalanced.			
Stretch. Key skills/concepts/knowledge that students should cover Identify situations where objects are in equilibrium			

Physics 2

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Year group: 7	Term: Autumn	Unit duration: 3-4 weeks	Number of lessons: 5		Unit title: Sound
Unit assessment: End of Topic				Fertile question: How was sound involved in your very first picture?	
Key skills/ concepts/ prior knowledge that students should have when starting this unit:				Start RAG	End RAG
1. Idea that some natural disasters are the result of waves 2. Vibrating sources emit a sound and Describe sound in relation to pitch and being loud or soft 3. Recall that sound can travel through materials 4. Eardrum is involved in hearing					
Key skills/concepts/knowledge that students should cover				Start RAG	End RAG
1. Wave Basics: Describe what waves are, identify their main features (amplitude, wavelength, frequency), and differentiate between transverse waves and longitudinal waves (like sound). 2. Wave Behaviour: Explain what happens when water waves interact with obstacles, including reflection (bouncing), refraction (bending), and diffraction 3. Combining Waves: Understand that when waves meet they superpose, either adding together or cancelling each other out (interference). 4. Sound Production & Travel: Describe how vibrations produce sound, how sound energy travels through materials, and explain why sound cannot travel through a vacuum. 5. Speed of Sound: Compare the speed of sound in different materials (solid > liquid > gas) and contrast with the speed of light (light is much faster). 6. Sound Characteristics: Link the loudness of a sound to its wave amplitude, and the pitch (high or low) to its frequency. 7. Hearing Range & Ultrasound: State the range of sound humans can hear (20 Hz to 20,000 Hz), describe what ultrasound is, and provide examples of how humans and animals use it.					
				Literacy. Key vocabulary/subject terminology that students should cover: Amplifier, amplify, amplitude, audible range, auditory canal, auditory nerve, cochlea, compression, crest, decibel, diaphragm, echo, energy, hertz, incident wave, infrasound, inner ear, kilohertz, longitudinal, loudness, medium, microphone, oscillation, oscilloscope, ossicle, pinna, pitch, rarefaction, receiver, reflected wave, reflection, reverberation, superpose, transmitter, transverse, trough, ultrasound, vacuum, vibration and vocal chords. Suggested materials teachers could/should use: KS3 Activate 1 Key home learning tasks students should complete:	

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8. The Ear & Safety: Describe the basic function of the ear, explain how a microphone works, 9. Hearing risk- Identify the risks of loud music and how damage can occur. 10. Echolocation: Explain why some animals use echolocation with ultrasound to navigate and hunt in dark			Kerboodle online task
Stretch. Key skills/concepts/knowledge that students should cover Explain how some animals hear the same sound differently			

Physics 3

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Year group: 7	Term: spring	Unit duration: 4 weeks	Number of lessons: 5-6		Unit title: Light
Unit assessment: End of Topic test				Fertile question: Would a world without colour be a world without light?	
Key skills/ concepts/ prior knowledge that students should have when starting this unit:				Start RAG	End RAG
1. light travels faster than sound 2. Recall that some objects emit light 3. light can travel through some objects (transparent) 4. objects that light cannot travel through (opaque) form shadows					
Key skills/concepts/knowledge that students should cover				Start RAG	End RAG
1. Light and Speed: Describe how light travels, interacts with materials and recall the speed of light. 2. Mirror Images: Explain how light reflects off a mirror and how the reflection you see is formed. 3. Law of reflection: understand that light is reflected at equal angles 4. Types of Reflection: Explain the difference between specular reflection (clear, shiny surfaces) and diffuse scattering (dull, rough surfaces that scatter light everywhere). 5. Refraction: Describe and explain how light is refracted, or bent, when it passes from one material into another (e.g., air to water). 6. Lenses and Prisms: Describe how lenses focus light to form images, and how a prism splits white light into the colours of the rainbow. 7. Mixing Colours: Describe how adding the primary colours (red, green, blue) makes secondary colours (cyan, magenta, yellow) and white light.					
				Literacy. Key vocabulary/subject terminology that students should cover: Absorb, angle of incidence, angle of reflection, continuous, converging, convex, cornea, diffuse reflection, dispersion, emit, endoscope, filter, focal point, focus, frequency, image, incident ray, inverted, iris, law of reflection, lens, light-time, luminous, non-luminous, normal, opaque, optic nerve, photoreceptors, pixel, reflected ray, refraction. Retina, specular reflection, tertiary colour, translucent, Suggested materials teachers could/should use: KS3 Activate 1	

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8. Filters: Explain how coloured materials and filters work by subtracting (absorbing) specific colours of light. 9. Predicting Colour: Use your knowledge to predict the colour of objects when viewed through different coloured lights or filters. 10. Eyes and Cameras: Describe how the human eye works, compare it to how a simple camera forms an image,			Key home learning tasks students should complete: Kerboodle online learning task
Stretch. Key skills/concepts/knowledge that students should cover Explain how the eye produces an Image			

Physics 4

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Year group: 7	Term: Summer	Unit duration: 3 weeks	Number of lessons: 5		Unit title: Space
Unit assessment: End of Topic test				Fertile question: Can we move to Mars in the near future?	
Key skills/ concepts/ prior knowledge that students should have when starting this unit:				Start RAG	End RAG
1. It Is hotter in the summer than in the winter and the days are longer 2. Stars emit light and the sun Is the only star in our solar system 3. The Earth spins on Its axis which Is why we have night and day 4. Basic knowledge of other planets in our solar system					
Key skills/concepts/knowledge that students should cover				Start RAG	End RAG
1. Night Sky Objects: Identification and description of objects visible in the night sky (e.g., stars, planets, the Moon). 2. Universe Structure: Description of the universe's structure, ordered by size and distance. 3. Solar System Arrangement: Description of how objects are arranged within the solar system. 4. Planetary Comparisons: Comparison of features, similarities, and differences between the planets. 5. Solar system formation: Explore how our solar system was formed 6. Day and Night: Explore what causes day and night 7. Seasons: Explanation of why seasonal changes and varying day lengths occur. 8. Celestial Motion: Explanation of the motion of the Sun, stars, and Moon across the sky. 9. Moon Phases: Description and prediction of the different phases of the Moon.					
				Literacy. Key vocabulary/subject terminology that students should cover: Day, Night, Seasons, tilt, Universe, Planets, Sun, star, astronomical, eclipse, phases, speed of light, Milky Way, Satellite Suggested materials teachers could/should use: KS3 Activate 1 Key home learning tasks students should complete:	

10. Eclipses: Explanation of why total solar and lunar eclipses happen.			Kerboodle online task
Stretch. Key skills/concepts/knowledge that students should cover: Scale a model of the solar system			