

### Science Curriculum Intent:

At QEGS, our Science Curriculum aims to provide engaging lessons and promotes teaching for understanding whilst covering the National Curriculum programmes of study. The Key Stage 3 content covers learning objectives in a logical order to lay strong foundations and to equip students for success at GCSE. To support all students toward fulfilling their potential, the KS3 courses balances the examined content with a mastery of ideas and skills. Students are then equipped to develop their knowledge, from understanding to application at GCSE.

### Physics Year 8 Curriculum:

There are 4 main areas of Physics that will be covered in Year 8: **Light**: – Recap reflection from Y7, refraction, optic fibres, dispersion, infra red and ultra violet, addition of coloured light, lenses and structure of the eye; **Sound**: – Nature of sound and it's detection, medium for sound to pass through, describing sounds, echoes, audible frequencies and ultrasound; **Electricity**: - Electrostatics, conductors, cells, ammeters, voltmeters, short circuits, resistance and mains electricity; **Magnetism**:- Attraction and repulsion, making and destroying, field patterns, electromagnets, electromagnet investigation and motor effect.

#### Autumn Term:

1. Revise year 7 work on light
2. Process reflection experiment results
3. Refraction of light
4. Optic fibres
5. Dispersion of white light
6. Infra red and ultra violet
7. Convex lenses and image formation
8. Structure of the eye
9. How sound is produced and detected

#### Key Objectives Autumn Term - To be able to:

1. Recall appropriate vocabulary, draw an accurate reflection diagram
2. Produce an Excel graph with labelled axes and a best fit straight line
3. Draw an accurate refraction diagram
4. Understand the use of optic fibres
5. Draw an accurate diagram showing the correct order of the colours
6. Show where IR and UV appear during dispersion, recognise that IR is detected as heat and UV causes tanning and fluorescence
7. Recall vocabulary, recognise that image distance depends on object distance
8. Recall vocabulary, understand how the eye focuses light
9. Draw a diagram showing compressions in front of a speaker, say how a microphone detects sound waves

#### Spring Term:

1. A medium is needed for sound to pass through
2. Describing sounds
3. Audible frequency range
4. Ultrasound
5. Electrostatics
6. Conductors and insulators
7. Bulb brightness in series and parallel circuits
8. Electric current
9. Cells and how they work
10. Short circuits

#### Key Objectives Spring Term - To be able to:

1. Have a rough idea of the speed of sound in air, recognise that sound travels at different speeds in different media
2. Recall appropriate vocabulary, identify changes on an oscilloscope trace
3. Recall the normal human audible range, recognise the importance of hearing protection
4. Say what ultrasound is and how it is used
5. Explain how plastic becomes charged, recall the forces between charged objects
6. Explain why some materials conduct charge
7. Use the idea of cells per bulb to predict the relative brightness of bulbs
8. Draw an ammeter correctly on a circuit diagram, compare current values
9. Recognise that the materials in cells produce a voltage and convert chemical to electrical energy
10. Predict the effect of adding a short circuit to a circuit

#### Summer Term:

1. Resistance
2. Dangers of mains electricity
3. Magnetic poles
4. Making and destroying magnetism
5. Field patterns
6. Electromagnets
7. Electromagnet investigation
8. Build motors

#### Key Objectives Summer Term - To be able to:

1. Understand qualitatively the idea of resistance
2. Recognise how mains electricity can be used safely
3. Recall attraction and repulsion between poles
4. Recall ways to make and destroy magnetism
5. Draw the directions of plotting compasses correctly on a diagram
6. Recognise the uses of electromagnets
7. Describe how to investigate the effect of current or turns on the strength of an electromagnet, analyse results
8. Understand the principles of how a motor works

#### Key Performance Standards

1. Draw accurate ray diagrams for reflection and refraction
2. Draw accurate diagrams for dispersion and identify the position of IR and UV
3. Recall what sound waves are
4. Be able to compare sounds of different loudness and pitch
5. Predict the forces on charged objects
6. Predict the relative brightness of bulbs
7. Predict the relative sizes of currents
8. State the energy changes in circuits
9. Predict the forces between magnets
10. Predict the direction of the field near a magnet
11. Understand the uses of electromagnets
12. Recall how the strengths of electromagnets can be compared