



Subject: Physics

Lead Teacher: Dr M S Catalan

Year: 7

## Curriculum organisation

Students are taught in mixed groups of **30** for **one** hour per week. They are not grouped by ability.

Overview of Topics & Key Information					How will your child be learning?
Term	Unit(s) of Work	Key Enquiry Questions	Key Content/ Terminology	Skills developed	
Autumn Term	Lab rules Experimental skills  Electrostatics  Basic Circuits	<ul style="list-style-type: none"> <li>• How to behave and work safely in a lab?</li> <li>• How to plot a line graph?</li> <li>• What is the structure of the atom?</li> <li>• What is and what causes the electrostatic force?</li> <li>• How are objects charged?</li> <li>• Which objects are conductors and which are insulators?</li> <li>• What are the rules of electrostatic attraction/repulsion?</li> <li>• How do we represent electrical circuits?</li> <li>• What is conventional current? What is electron current?</li> <li>• What is and what causes resistance?</li> <li>• What is a series / parallel circuit?</li> <li>• What is the relationship between current and resistance?</li> <li>• What is a resistor?</li> <li>• What is the total current in a series/parallel circuit?</li> <li>• What is the total resistance in a series circuit?</li> </ul>	<ul style="list-style-type: none"> <li>• Safety in the lab</li> <li>• Plotting a line graph, x and y axis, labels, units</li> <li>• Line of best fit</li> <li>• Atoms, nucleus, protons, neutrons and electrons</li> <li>• Electric charge</li> <li>• Attraction and repulsion</li> <li>• Conductors/Insulators</li> <li>• Charging by friction</li> <li>• Gold-leaf electroscope and Van der Graaff generator</li> <li>• Metals and free-electrons</li> <li>• Circuit symbols</li> <li>• Series/parallel circuits</li> <li>• Current, ampere</li> <li>• Power supply, wires, ammeters, rheostat, wire-board</li> <li>• Open/closed/short circuit</li> <li>• Resistance, Ohm</li> </ul>	<ul style="list-style-type: none"> <li>• How to work safely in a lab environment</li> <li>• Learn how to collect, put together, use and return scientific equipment</li> <li>• Gathering, recording and interpreting experimental results</li> <li>• Collecting results in a table</li> <li>• Plotting line graphs</li> <li>• Learn to observe and explain physical phenomena</li> <li>• Recognise circuit symbols</li> <li>• Learn to connect circuits safely and correctly</li> <li>• Understanding the dangers of electricity</li> <li>• Reading digital meters and multi-meters</li> <li>• Interpreting graphical information</li> <li>• Applying knowledge to work out new scenarios</li> <li>• Problem solving using ratios, direct and inverse proportionality.</li> <li>• Distinguishing quantities based on their units.</li> </ul>	<ul style="list-style-type: none"> <li>• Whole class discussion</li> <li>• Practical activities</li> <li>• Pair work</li> <li>• Small group discussion</li> <li>• Problem-solving tasks</li> <li>• Watching short video clips</li> <li>• Research tasks</li> <li>• Homework and class worksheets</li> </ul>

Spring Term	Magnetism	<ul style="list-style-type: none"> <li>• Which substances are magnetic materials?</li> <li>• What are the rules of magnetic attraction and repulsion?</li> <li>• What is a magnetic field?</li> <li>• What is the shape and direction of a magnetic field around a bar magnet.</li> <li>• Strength of a magnetic field</li> <li>• How does one create a magnet?</li> <li>• What causes magnetism?</li> <li>• What do we know about the Earth's magnetic field?</li> <li>• What are everyday applications of magnetism?</li> </ul>	<ul style="list-style-type: none"> <li>• Magnets, ferromagnetic/non-magnetic materials</li> <li>• (soft/hard) iron, cobalt, nickel</li> <li>• Permanent magnets</li> <li>• Temporary magnetism</li> <li>• Iron filings, plotting compass</li> <li>• North/south pole</li> <li>• Magnetic domains</li> <li>• Earth's magnetic field</li> </ul>	<ul style="list-style-type: none"> <li>• Handling magnets</li> <li>• Collecting scientific data, graphing and interpreting results</li> <li>• Drawing the shape of magnetic fields</li> <li>• Interpreting magnetic field lines</li> <li>• Learning how to make an electromagnet</li> <li>• Interpret more complex circuits and explain how they work</li> <li>• Apply knowledge to solve new problems</li> </ul>
Summer Term	Electromagnetism	<ul style="list-style-type: none"> <li>• What is electromagnetism?</li> <li>• How does current affect the strength of a magnetic field?</li> <li>• How does the number of turns affect the strength of a magnetic field?</li> <li>• What is the purpose of an iron core?</li> <li>• What is the difference between a permanent magnet and an electromagnet?</li> <li>• What are the applications of electromagnetism?</li> </ul>	<ul style="list-style-type: none"> <li>• Field around a current carrying wire</li> <li>• Magnetic field around a loop of wire with a current</li> <li>• Electromagnetic relay, Electric Bell</li> </ul>	<ul style="list-style-type: none"> <li>• Inferring information from physical processes</li> <li>• Linking ideas and concepts</li> <li>• Learning to use and manipulate a simple equation with three variables.</li> <li>• Carry out basic calculations of mass and weight.</li> </ul>
	Forces	<ul style="list-style-type: none"> <li>• What is a force?</li> <li>• What are the types of forces? How to tell which force is present?</li> <li>• What happens when there is more than one force?</li> <li>• What happens to balanced/unbalanced forces?</li> </ul>	<ul style="list-style-type: none"> <li>• Contact/non-contact forces</li> <li>• Weight, Normal or Reaction, Tension, Friction</li> <li>• Balanced/unbalanced forces</li> </ul>	
	Mass and weight	<ul style="list-style-type: none"> <li>• What is mass? What is weight? How are they measured?</li> </ul>	<ul style="list-style-type: none"> <li>• Weight, mass and gravitational field strength.</li> </ul>	
	The solar system	<ul style="list-style-type: none"> <li>• What are the bodies within our Solar System?</li> </ul>	<ul style="list-style-type: none"> <li>• Sun, planets, satellites, asteroids, comets</li> </ul>	

Equipment needed for lessons	How will learning and progress be assessed?
<ul style="list-style-type: none"> <li>• Standard school stationery</li> <li>• Exercise book</li> <li>• Scientific calculator, 30-cm ruler</li> <li>• Glue stick, pencil, eraser</li> <li>• A hairband to tie-up long hair for experiments</li> </ul>	<ul style="list-style-type: none"> <li>• Homework tasks and worksheets</li> <li>• End of unit tests (subject knowledge focus)</li> <li>• Formal assessment week (May)</li> <li>• Peer and self-assessment</li> <li>• Retrieval practice activities</li> </ul>

Extension & Enrichment opportunities	What can you do to support your child?
<ul style="list-style-type: none"> <li>• Weekly Physics Drop-in</li> <li>• STEM Club (run by A-level pupils)</li> <li>• Revision Monkey KS3 <ul style="list-style-type: none"> <li>• <a href="https://www.youtube.com/playlist?list=PLyf3QQ9ddzgngBzZiwWcEBuRoKUYaXS6N">https://www.youtube.com/playlist?list=PLyf3QQ9ddzgngBzZiwWcEBuRoKUYaXS6N</a></li> </ul> </li> <li>• Physics FuseSchool-GlobalEducation, for example <ul style="list-style-type: none"> <li>• Current and circuits: <ul style="list-style-type: none"> <li>• <a href="https://www.youtube.com/watch?v=enuNdK426Wo">https://www.youtube.com/watch?v=enuNdK426Wo</a> (ignore any equations)</li> </ul> </li> <li>• Magnetism: <ul style="list-style-type: none"> <li>• <a href="https://www.youtube.com/watch?v=SCnGfE7qxHc">https://www.youtube.com/watch?v=SCnGfE7qxHc</a></li> </ul> </li> </ul> </li> <li>• Explore some other physics topics in Ted-Ed Physics <ul style="list-style-type: none"> <li>• <a href="https://www.youtube.com/results?search_query=ted+ed+physics">https://www.youtube.com/results?search_query=ted+ed+physics</a> For example: <ul style="list-style-type: none"> <li>• <a href="https://www.youtube.com/watch?v=yc2-363MIQs">https://www.youtube.com/watch?v=yc2-363MIQs</a></li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Help with their organisation. Ensure that they always bring their exercise books and standard equipment to lessons. Bags need to be packed the night before.</li> <li>• Encourage your child to complete any homework set on the day it is set, rather than the weekend. This allows your child to seek help the following day or attend Physics Drop-in prior to the deadline if they are unsure about any aspect of the work.</li> <li>• Insist that they read and reflect on their notes before attempting their homework to remind themselves of the main concepts/facts. Encourage them to verbally relay the information to you, using scientific terms, without looking at their exercise books.</li> <li>• Ensure that homework is completed <b>by your child</b> by the due date.</li> <li>• Help their recall when revising for tests by asking them questions based on their notes and the questions set in homework the week before a test or an exam.</li> <li>• Encourage them to attend Physics Drop-in regularly if they need help.</li> </ul>

Inclusion	Inclusion within Y7 Physics
<ul style="list-style-type: none"> <li>• Teachers follow student passports to ensure that the needs of all students with SEND are met.</li> <li>• Work is enlarged to the necessary size for visually impaired students.</li> <li>• Teachers will ensure that classrooms are quiet learning environments where possible and will dim lights to support students with sensory needs.</li> <li>• Students have the use of laptop if they have a SEND need whereby use of a laptop supports them.</li> <li>• Hearing impaired students are supported through use a radio aid and teachers ensure that students can lip read at all times during lessons.</li> <li>• Dyslexic students are encouraged to use coloured overlays when they are required to read long passages.</li> <li>• Use of dyslexic friendly fonts and coloured backgrounds used in PowerPoints/resources.</li> <li>• Students with ADHD are given movement breaks, fidget toys and lessons are 'chunked' to aid concentration.</li> <li>• Students are seated according to their needs, students work with the SENDCo to decide upon this.</li> </ul>	<ul style="list-style-type: none"> <li>• For pupils with visual impairment, enlarged graph paper for plotting graphs during experiments will be available.</li> <li>• For upper body physical impairment, pupils are allowed to photocopy or take photographs of a classmate's exercise book. A word processor is not always a practical option for labelled diagrams, drawing apparatus or drawing graphs.</li> <li>• Where possible we amend practical equipment or provide a magnifying glass to view instruments.</li> <li>• Videos shown with subtitles.</li> <li>• Some laboratories have height-adjustable benches for wheelchair access</li> </ul>

If you have any questions about this Learning Overview, please contact the named Teacher above.