Newport Girls' High School **Y7-11 Learning Overview**

Subject:	Physics	**Lead Teacher:**	Dr M S Catalan	**Year:**	8

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

Term	Unit(s) of Work	Key Enquiry Questions	Key Content/ Terminology	Skills developed	**How will your child be learning?**
Autumn Term	The nature of light Shadows and Eclipses Formation of images	• What is light? • What objects produce light? • How does light allow us to see the world? • How to we represent light rays? • What is the speed of light? • How a shadow is formed? • What are the phases of the Moon? • What is an eclipse? • How do eclipses form? • What is a pinhole camera?	• Luminous and non-luminous objects • Transparent, translucent, opaque • Umbra, penumbra • Phases of the Moon • Solar and lunar eclipses • Real and virtual images • Pinhole camera	• Set up circuits using a ray box • Learn to interpret practical results and link it to ray diagrams • Learn how to use a pinhole camera • Precision drawing of ray diagrams • How to draw scale diagrams • How to construct the image formed	• Whole class discussion • Practical activities • Pair work • Small group discussion • Problem-solving tasks • Watching short video clips • Research tasks • Homework and class worksheets
Spring Term	Reflection Reflection on a plane mirror Applications of reflection Light and colour Periscopes Refraction Refraction in nature Dispersion and colour Total internal reflection	• How does light reflect on surfaces? • What are the rules of reflection? • How do images form in plane mirrors? • What are the properties of the image formed in plane mirrors? • Where does the image(s) form when there is more than one mirror? • How many images form when there are multiple mirrors? • How to we see colour? • What happens when light passes through a material? • What are the rules of refraction? • What happens when light is split into the different colours of the rainbow? • Where can we observe refraction and dispersion in nature? • What is total internal reflection? • What are the consequences of total internal reflection?	• Reflection • Specular/diffuse reflection • Plane mirror • Incident/reflected ray • Angle of incidence • Angle of reflection • Normal • Real/virtual images • Inverted image • Periscopes • Kaleidoscopes • Refraction • Transmission, absorption • Refracted ray • Angle of refraction • Dispersion • Prism • Total internal reflection	• Carry out experimental work using ray boxes, mirrors, glass or Perspex block • Learn to interpret practical results and link it to ray diagrams • Measure angles precisely using a protractor • Precision drawing of ray diagrams using a protractor and a ruler	

Summer Term	The states of matter Heat and Temperature Thermometers Heat and expansion Linear expansion of solids Applications of expansion of solids Expansion of liquids and gases	• What are the three states of matter • What is the kinetic theory of matter? • How to we establish a temperature scale? • What is the difference between heat and temperature? • How is heat transferred? • How to we measure temperature? • How do we set a temperature scale? • What happens when solids get heated? • What is a bimetallic strip? • When is expansion an advantage and when is it a disadvantage? • What are the applications of a bimetallic strip? • What happens when liquids and gases get heated?	• State/phases of matter • Solids, liquids and gases • Kinetic Theory • Heat • Temperature • Thermometers • Calibrate • Celsius, Fahrenheit, Kelvin • Molecules, atoms, particles • Vibration and collisions • Expansion • Bimetallic strip	• Explain physical phenomena using scientific terminology • Calibrate a thermometer • Read temperature	

Equipment needed for lessons	How will learning and progress be assessed?
• Standard school stationery • Exercise book • Scientific calculator, 30-cm ruler • Glue stick, pencil, eraser • A hairband to tie-up long hair for experiments	• Homework tasks and worksheets • End of unit tests (subject knowledge focus) • Formal assessment week (May) • Peer and self-assessment • Retrieval practice activities

Extension & Enrichment opportunities	What can you do to support your child?

• Weekly Physics Drop-in
• STEM Club (run by A-level pupils)
• Revision Monkey KS3
  • https://www.youtube.com/playlist?list=PLyf3QQ9ddzgngBzZiwWcEBuRoKUYaXS6N
• Physics FuseSchool-GlobalEducation, for example
  • Current and circuits: https://www.youtube.com/watch?v=enuNdK426Wo (ignore any equations)
  • Magnetism: https://www.youtube.com/watch?v=SCnGfE7qxHc
  • Explore some other physics topics in Ted-Ed Physics: https://www.youtube.com/results?search_query=ted+ed+physics
  For example: https://www.youtube.com/watch?v=yc2-363MIQs
	• 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.
	• Encourage your child to complete any homework set on the day it is set, rather than on the weekend. This allows your child to seek help the following day or attend Physics Drop-in prior to the deadline if they need some help.
	• 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.
	• Ensure that homework is completed **by your child** by the due date.
	• Before a test or an exam, help their recall when revising for tests but asking them questions based on their notes, classwork and homework questions and problems.
	• Encourage them to attend Physics Drop-in regularly if they need extra support.

Inclusion	Inclusion within Y8 Physics
• Teachers follow student passports to ensure that the needs of all students with SEND are met. • Work is enlarged to the necessary size for visually impaired students. • Teachers will ensure that classrooms are quiet learning environments where possible and will dim lights to support students with sensory needs. • Students have the use of laptop if they have a SEND need whereby use of a laptop supports them. • Hearing impaired students are supported through use a radio aid and teachers ensure that students can lip read at all times during lessons. • Dyslexic students are encouraged to use coloured overlays when they are required to read long passages. • Use of dyslexic friendly fonts and coloured backgrounds used in PowerPoints/resources. • Students with ADHD are given movement breaks, fidget toys and lessons are 'chunked' to aid concentration. • Students are seated according to their needs, students work with the SENDCo to decide upon this.	• For pupils with visual impairment, enlarged graph paper for plotting graphs during experiments will be available. • 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 ray diagrams and labelled diagrams. It is not possible to measure angles using a protractor on a screen. • Where possible we amend practical equipment or provide a magnifying glass to view instruments. • Videos shown with subtitles. • Some laboratories have height-adjustable benches for wheelchair access. • Be aware of colour blindness when talking of colour.

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