King's Academy Binfield

SECONDARY SCIENCE LEARNING JOURNEY: PHYSICS

REVISION AND COMMUNICATION

YEAR 11

Permanent and induced magnetism
Induced potential
Atoms and isotopes
Hazards of uses of radioactive emissions and background radiation

Magnetism | **The motor effect** | **The national grid** | **Changes of state and the particle model Internal energy** | **Pressure** **Pressure in gases and increasing the pressure** | **Atoms** | **Radiation** | **Space**

Magnetic forces and fields
Use of transformers
Energy transfers
Atoms and nuclear radiation
Nuclear fission and fusion
Red shift
Solar system, stability of solar orbitals, satellites

Current, potential difference and resistance
Series and Parallel
Domestic uses and safety
Energy Transfers
Static electricity

Waves In the air
1st and 3rd law of thermodynamics

Electromagnetic waves **Black body radiation** | **Waves** | **Energy resources** | **Conservation and dissipation of energy** | **Energy changes** | **Momentum** **Changes in momentum**

In fluids and solids
Conserving energy use
National and global
Energy stores before and after changes
Newton's 3rd law of motion

Forces and motion
Moments levers & gears
Pressure
Elasticity
Work done
Forces
Understanding work done as energy transferred

Text in blue is GCSE separate science Physics only and will not be covered by the combined science course

YEAR 10

YEAR 9

Calculating work done, levers and pulleys
Transfer of energy in waves
Motion
Forces and Energy
Calculating averages

WORK | **WAVE EFFECTS WAVE PROPERTIES** | **CORE PHYS** | **MATHS IN SCIENCE FOR GCSE**

GCSE CONTENT BEGINS

Models of waves
Probability
Graph Skills

Calculating pressure in solids, liquids and gases
Reflection and refraction
Speed of sound and how we hear

MAGNETISM | **PRESSURE** | **CONTACT FORCES** | **LIGHT** | **SOUND**

Permanent magnets and electromagnets
Drag, friction and Hooke's law

Use the formula: weight (N) = mass (kg) x gravitational field strength (N/kg).
Calculate resistance using the formula: resistance (Ω) = potential difference (V) ÷ current (A).

ENERGY TRANSFER

GRAVITY | **VOLTAGE** | **CURRENT** | **ENERGY COSTS**

When energy is transferred, the total is conserved, but some energy is dissipated, reducing the useful energy.

SPEED

Use the formula: speed = distance (m)/time (s) or distance-time graphs, to calculate speed

Compare and explain current flow in different parts of a circuit

Calculate the cost of home energy usage

YEAR 7

Schemes of learning are designed to ensure students progress based on their security of understanding and readiness for the next stage.
STRETCH and CHALLENGE is at the heart of our curriculum

Topic tests and termly assessments are designed to accurately assess knowledge and maximise progression.

The scheme is designed with INTERLEAVING as a key element

Applying the scientific method, seeing the world analytically and using information learned to explain phenomena and make predictions

Curiosity about the world around us and an ability to communicate scientific concepts and solve problems.