

Physics Learning Journey

Skills

Year 11 "Becoming KS5 Ready"

Knowledge

Magnetism 8, 9, 10, 14, 23, 24, 27

National grid, transformers, induced potential, magnets – permanent and induced, magnetic fields, electromagnets, DC motors, alternator and dynamos, other uses of induction

Revision

Future Education, Employmen & Training

> KS5 Study

Electricity 8, 9, 10, 14, 23, 24, 27

Static, Mains – AC and DC, solving circuit problems, series and parallel circuits, I/V characteristics – Ohm's law, resistance, current, potential difference, electrical power, sensing circuits, mains – safety, electric fields.

Year 10 "Developing into Independent Learners"



Energy 1,8, 9, 10, 14, 23, 24, 27

Energy resources, efficiency, energy calculations, measuring specific heat capacity, power, conservation energy, energy stores, defining work, energy transfers, kinetic energy, and gravitational potential energy.

Space 6, 7, 8, 9, 10, 14, 23, 24, 27

Structure of the universe, red shift and evidence for the big bang, stellar evolution

Forces 8, 9, 10, 14, 23, 24, 27

Measuring speed, Velocity time graphs, Vectors, Newton's Law, Solving Vector problems – Scale Drawing/Resolutio Behaviour of springs – Hooke's law, elastic potential energy, momentum and its conservation, moments and gears atmospheric pressure, Distance time graphs, Acceleration, terminal velocity, calculating work done, elastic potential energy, rate of change of momentum, pressure at a depth in liquids, car safety.

Year 10

Structure of the Atom 8, 9, 10, 14, 23, 24, 27

Uses/dangers of ionizing radiation, Half-Life, Nuclear reactions, Structure of the atom, fission, fusion, Contamination and irradiatio Radioactivity – Alpha, beta and gamma, History of the Atom.

Waves 8, 9, 10, 14, 23, 24, 27

Black body radiation, Ultrasound, Transmission, Reflection or absorption, Wave Equation, longitudina & transverse waves, Lenses, Seismic waves, Reflection & refraction od light, Electromagnetic spectrum, Wave terminology

Particle Model 8, 9, 10, 14, 23, 24, 27

Work done on gases, Specific latent heat, Specific heat capacity, Internal energy, Density, Particle

Year 8 "Taking Responsibility for Learning"

Year 9 "Developing Skills to Enhance Learning"

Heating & Cooling 8, 9, 10, 14, 23, 24, 27

Heat & Temperature, Heat transport, Conduction, Convection, Radiation

Year 9

Magnetism 8, 9, 10, 14, 23, 24, 27

Magnets and magnetic materials, Electromagnets, Magnetic Poles

Waves 8, 9, 10, 14, 23, 24, 27

Ultrasound, Interference

Year 7 "Transition to High School"

Earth6, 7, 8, 9, 10, 14, 23, 24, 27

Seismic waves, Space exploration, The solar system, The earth, and the moon.

Year 8

Gravity & Pressure6, 7, 8, 9, 10, 14, 23, 24, 27

Pressure in liquids, Pressure in solids, Pressure in gases – Hydraulics.

Electricity6, 7, 8, 9, 10, 14, 23, 24, 27 Potential difference, Ohm's law, Resistance, Circuits & current

Energy 6, 7, 8, 9, 10, 14, 23, 24, 27

Conservation, Work, Efficiency, Humans & Energy, Gravitational potential energy, Energy stores

Waves 6, 7, 8, 9, 10, 14, 23, 24, 27

ight, Loudness and pitch, detecting sound the ear, Speed of sound, Seeing colour, Reflection, Refraction, Sound, Waves.



Intro to science

Fundamental skills, Table, and graph skills

Forces 6, 7, 8, 9, 10, 14, 23, 24, 27

lentifying & representing forces, drag forces & fiction, Speed, distance, time, Resultant forces, Forces at a distance, Stretching and squashing.



Physics GH6 Learning Journey

Skills

Year 13 "Are you Fit for FEET?"

Knowledge

Final A-Level Exams

Future Education, Employment & Training

6.5 Medical imaging.

Using X-rays, Diagnostic methods in medicine, Using ultrasound, 8, 14, 27

6.4 Nuclear and particle physics

The nuclear atom, Fundamental particles, Radioactivity, Nuclear fission and fusion 6, 8, 14, 27

6.1 Capacitors

Capacitors Energy, Charging and discharging capacitors, 8, 14, 27

6.2 Electric fields

Point and spherical charges, Coulomb's law, Uniform electric field, Electric potential and energy 8, 14, 27

6.3 Electromagnetism

Magnetic fields, Motion of charged particles, Electromagnetism, 8, 14, 27

Particles and Medical Physics

5.5 Astrophysics and cosmology Stars, Electromagnetic radiation from stars, Cosmology, 6, 8, 14, 27

5.4 Gravitational fields

Point and spherical masses, Newton's law of gravitation, Planetary motion, Gravitational potential and energy 8, 14, 27

5.1 Thermal physics Temperature, Solid, liquid and gas, Thermal properties of materials, Ideal gases 8, 14, 27

5.2 Circular motion Kinematics of circular motion, Centripetal force, 8, 14, 27

5.3 Oscillations

Simple harmonic oscillations, Energy of a simple harmonic oscillator, Damping 8, 14, 27

The Newtonian World and Astrophysics



Year 12
"Introduction to A-Level Mindset"

4.3 Electrical circuits

Series and parallel circuits, Internal resistance,
Potential dividers 8, 14, 27

4.4 Waves

Wave motion, Electromagnetic waves, Superposition, Stationary waves 8, 14, 27

4.5 Quantum

Photons, The photoelectric effect, Wave-particle duality 8, 14, 27

4.2 Energy, power and resistance Circuit symbols, E.m.f. and p.d, Resistance, Resistivity, Power, 8, 14, 27

4.1 Charge and current Charge and current, Mean drift velocity, 8, 14, 27

Electrons, Waves and Photons

3.4 Materials Springs, Mechanical properties of matter,

8, 14, 27

3.5 Newton's laws of motion and momentum Newton's laws of motion, Collisions 8, 14, 27

3.3 Work, energy and power Work and conservation of energy, Kinetic and potential energies, Power, 8, 14, 27

3.2 Forces in action Dynamics, Motion with non-uniform acceleration, Equilibrium, Density and pressure, 8, 14,27

Forces and Motion

3.1 Motion
Kinematics, Linear motion, Projectile motion
8, 14, 27

2.3 Nature of quantities Scalars and vectors, 8, 14, 27

2.2 Making measurements and analysing data Measurements and uncertainties: 8, 14, 27

2.1 Physical quantities and units Physical quantities, S.I. units: 8, 23, 27





Foundations in Physics

Module 1: Development of practical skills in physics: 2, 3, 8, 9, 14, 15, 24, 27,