PHYSICS LEARNING JOURNEY

Understanding and Applying Physics Skills

Year 12 → Year 13

- Apply base and derived SI units
- Demonstrate knowledge of practical skills
- Evaluate the use of practical techniques
- Use estimated values to solve problems
- Understand the limitations of physical measurements
- Communicate ideas in appropriate ways
- Represent information accurately using appropriate graphs or technology
- Interpret numerical and graphical data to explain or justify physics theory
- Understand the applications of physics and evaluate associated benefits and risks
- Understand how new knowledge is validated by the physics community
- Understand the way society uses physics to inform decision making

YEAR 13

Further mechanics

- Circular motion
- Force, impulse and energy
- Momentum and 2-D collisions
- PAG

Thermodynamics

- Thermal properties of materials
- PAG
- Kinetic theory
- Black-body radiation
- Internal energy and temperature
- PAG
- Ideal gases
- PAG

Nuclear radiation

- Radioactive decay
- PAG
- Fission
- Exponential law of decay
- Fusion

Oscillations

- PAG
- Free and forced oscillation
- Simple harmonic motion

Nuclear and particle physics

- The detection of particles
- Accelerators
- Particle classification and quarks
- Atomic structure

Space

- Doppler effect
- H-R diagrams
- Fate of the Universe
- Life cycle of stars
- Determining astronomical distances

Gravitational fields

- Orbits
- Gravitational fields

Waves and light

- Lenses
- Wave-particle duality
- Ultrasound and ultrasonic imaging
- Standing waves
- PAG
- The photoelectric effect

Electric & magnetic fields

- PAG
- Electromagnetic induction
- Types of waves
- PAG

Electric circuits

- E.M.F and internal resistance
- The potential divider
- Capacitors
- Resistance and resistivity
- Current-voltage relationships
- Charge, current and potential difference

YEAR 12

Materials

- Conservation of charge and energy
- Electric fields
- Electrical energy and power
- Density
- PAG
- Young's modulus
- Hooke's Law
- Upthrust
- PAG
- Viscosity
- Stress-strain and force-extension graph
- Stress and strain

Mechanics

- Magnetic fields and forces
- Alternating currents
- Polarisation
- Super-positioning and coherence
- Refractive index
- Diffraction and diffraction gratings
- Momentum, energy work and power
- Forces
- PAG
- Freefall and projectile motion
- Calculating uncertainty
- S.I. units
- Centre of gravity
- Newton's Laws
- Motion graphs
- Scalars, vectors and linear motion
- Standard form and significance
- Base quantities

Working as a Physicist

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