

A Level Physics in Year 12

Course Content

A-Level Physics in Year 12 will focus on the following components:

- Measurements and their errors
- Particle physics and quantum phenomena
- Waves and optics
- Materials and mechanics
- Electricity

Measurements and their errors

- Use of SI units and their prefixes
- Limitation of physical measurements
- Estimation of physical quantities

Particle physics and quantum phenomena

- Constituents of the atom
- Stable and unstable nuclei
- Particles, antiparticles and photons
- Particle interactions and classification of particles
- Quarks and antiquarks
- Application of conservation laws
- Electromagnetic radiation and quantum phenomena
- The photoelectric effect
- Collisions of electrons with atoms and energy levels and photon emission
- Wave particle duality

Waves and optics

- Progressive and stationary waves
- Longitudinal and transverse waves
- Superposition of waves and stationary waves
- Refraction, diffraction and interference

Mechanics and materials

- Force, moments, energy and momentum
- Scalars and vectors
- Motion in a straight line
- Projectiles and Newton's laws of motion
- Material properties and Young's Modulus

Electricity

- Current-voltage characteristics
- Resistivity
- Circuits and potential dividers
- Electromotive force and internal resistance

The A-level also includes 6 in-depth required practical experiments:

- Investigating standing waves on a string
- Investigating Young's Double Slit and diffraction gratings
- Finding g by free-fall
- Determining the Young's modulus of a wire
- Determining the resistivity of a wire
- Investigating the electromotive force and internal resistance of a cell

Year 12 Internal UCAS Exam Week

Students will sit two papers:

Paper 1: All sections of AS Physics (1h 30 mins)

Format: Short and long answer questions by topic.

Paper 2: All sections of AS Physics (1h 30 mins)

Format: Short and long answer questions on practical skills and data analysis, 30 multiple choice questions on all topics.

Specification and Examination Board:

Physics 7407/8

Examination Board: AQA

<http://www.aqa.org.uk/subjects/science/as-and-a-level/physics-7407-7408>

