



IGCSE Physics 0625

Curriculum Content

Physics is the science of the fundamental concepts of field, force, radiation and particle structures, which are inter-linked to form unified models of the behaviour of the material universe. From such models, a wide range of ideas, from the broadest issue of the development of the universe over time to the numerous and detailed ways in which new technologies may be invented, have emerged. These have enriched both our basic understanding of, and our many adaptations to, our material environment.

With this subject, students will be taught to understand how, through the ideas of physics, the complex and diverse phenomena of the natural world can be described in terms of a number of key ideas which are of universal application and which can be illustrated in the separate topics set out below. These ideas include:

- the use of models, as in the particle model of matter or the wave models of light and of sound
- the concept of cause and effect in explaining such links as those between force and acceleration, or between changes in atomic nuclei and radioactive emissions
- the phenomena of 'action at a distance' and the related concept of the field as the key to analysing electrical, magnetic and gravitational effects
- that differences, for example between pressures or temperatures or electrical potentials, are the drivers of change
- that proportionality, for example between weight and mass of an object or between force and extension in a spring, is an important aspect of many models in science.

The Curriculum content below is a guide to the areas on which candidates are assessed. Students may follow the Core curriculum only **or** they may take the Extended curriculum, which includes both the Core and the Supplement.

Topic	Content
Measurements and units	Numbers and units, system of units, measuring length and time, volume and density, measuring volume and density, mass and density
Forces and motion	Speed, velocity, and acceleration, motion graph, recording motion, force, mass and acceleration, friction and braking , force, weight and gravity, action and reaction, vectors, moving circles

Affiliations





Topic	Content
Forces and pressure	Forces and turning effects, centre of mass, moments, stretching, compressing, pressure, pressure in liquids, hydraulic systems, pressure from air, gas pressure and volume
Forces and energy	Work and energy, energy transformation, calculating PE and KE, efficiency and power, energy for electricity, energy resources, how the world gets its energy
Thermal effects	Moving particles, temperature, expanding solids and liquids, heating gases, thermal conduction, convection, thermal radiation, liquids and vapors, specific heat capacity, latent heat
Waves and sounds	Transverse and longitudinal waves, wave effects, sound waves, speed of sound and echoes, characteristics of sound waves, ultrasound
Rays and waves	Light rays and waves, reflection in plane mirrors, refraction of light, total internal reflection, refraction calculations, lenses, camera, projector, and enlarger, the human eye, electromagnetic waves, communications
Electricity	Electric charge, electric fields, current in a simple circuit, potential difference, resistance and its factors, series and parallel circuits, electrical power, mains electricity, electrical energy calculations
Magnets and currents	Magnets, magnetic fields, magnetic effect of a current, electromagnets, magnetic force on a current, electric motors, electromagnetic induction, induced current, generators, coils and transformers, power across the country
Electrons and electronics	Electronic essentials, components, transistors, logic gates, electron beams
Atoms and radioactivity	Inside atoms, nuclear radiation, radioactive decay, nuclear energy, fusion future, using radioactivity, atoms and particles
Practical physics	Getting organised and working safely, observing, measuring, and recording, dealing with data, a full investigation, experimental investigations, practical tests, experimental skills

Affiliations





Assessment

Cambridge IGCSE Physics students are awarded grades ranging from A* to G.

Students expected to achieve grades D, E, F or G, study the Core Curriculum only and are eligible for grades C to G.

Students expected to achieve grade C or higher should study the Extended Curriculum, which comprises the Core and Supplement Curriculums; these candidates are eligible for all grades from A* to G.

All students must take **three** papers.

All Candidates Must Take:	
Paper 1 (45 minutes) Multiple choice question paper weighted at 30%	
and either:	or:
Paper 2 (1 hour 15 minutes) Core theory paper weighted at 50%	Paper 3 (1 hour 15 minutes) Extended theory paper weighted at 50%
Paper 6 (1 hour) Alternative to practical weighted at 20%	