	Electricity	Forces	Energy	Particles	Universe
Year 7		**Forces** (squashing & stretching, drag & friction, at a distance, balanced & unbalanced)		**Light** (reflection, refraction, the eye/cameras, colour) **Sound** (waves, energy transfer, loudness & pitch, detection, echoes & ultrasound)	**Space** (night sky, solar system, earth, moon)
Year 8	Electricity	**Motion** (speed, motion graphs, turning forces)	Energy	**Pressure** (in liquids, in solids, in gases)	
Year 9	**Electricity** (current, potential difference, resistance, circuit symbols, charge, resistance of a wire, I-V graphs, I-V characteristics, circuits, domestic safety, Power, energy transfer, National Grid, Static electricity, force on charge, electric fields)		**Energy** (energy in systems, energy stores, calculating energy, energy changes, work, power, conservation, thermal insulation, efficiency, energy resources		
Year 10		**Forces A** (scalars & vectors, contact & non-contact, magnitude, weight, resultant forces, free body diagrams, work done & energy transfers, elasticity, Hookes law, elastic potential energy, moments, levers, gears, pressure and pressure difference in fluids, atmospheric pressure)		**Radioactivity** (atomic structure, ions, isotopes, discovery of nucleus, nuclear decay, ionisation, detecting particles, background radiation, half-life & stability, hazards, medicine, irradiation, fission, chain reaction, NPS, fusion **Particle model of matter** (Density, density of liquids, density of regular and irregular solids, solids, liquids, gases, internal energy, specific heat capacity, latent heat, pressure, work and energy, measuring SHC)	
Year 11	**Electricity & Magnetism** (permsnent & induced magnets, magnetic fields near a straight wire, solenoids, electromagnets, RH grip, LH rule, magnetic flux density, force on a wire, combining magnetic fields, motors, loudspeakers, induced potential, transformers, National Grid, Coils & magnets, generators, dynamos, microphones)	**Forces B** (forces and motion, distance-time graphs, acceleration, velocity-time graphs, termainal velocity, Newton's laws of motion, F=ma, inertia, forces & breaking, reaction times, momentum, conservation of momentum, suvat)		**Waves** (transverse & longitudinal waves, properties, wave speed, investigating waves, reflection, transmission & absorption of waves, ultrasound, seismic waves, electromagnetic waves, refraction, investigating reflection & refraction, producing e-m waves, hazards of e-m waves, radiation dose, using e-m waves, emission of IR radiation, lenses, visible light, colours, black-body radiation)	**Space Physics - Triple** (Planets, the pull of gravity and orbits, galaxies, life-cycle of a star, circular orbits, red-shift, big bang theory, developing ideas)
Year 12	**Electricity** (Current, potential difference, resistance, I/V characteristics, resistivity & superconductivity, resistivity in a wire, electrical energy and power, emf and internal resistance, emf and internal resistance, conservation of energy and charge, the potential divider	**Mechanics** (Scalars & vectors, forces, moments, mass, weight and centre of mass, displacement-time graphs, velocity-time graphs, acceleration-time graphs, motion with uniform acceleration, acceleration due to gravity, freefall, projectile motion, Newton's Laws of motion, drag, lift, terminal speed, momentum & impulse, work & power, conservation of energy and efficiency **Materials** (properties of materials, stress and strain, Youngs modulus, stress-strain and force extension graphs		**Quantum phenomena** (The photoelectric effect, energy levels, photon emission, wave-particle duality) **Waves** (progressive waves, longitudinal & transverse waves, superposition & coherence, stationary waves, waves on a string, diffraction, Youngs double slits, two-source interference, diffraction gratings, refractive index, **Particles** (Atomic structure, stable & unstable nuclei, particles & antiparticles, forces & exchange particles, classification of particles, quarks)	
Year 13	**Electronics - option E** (MOSFET, zener diodes, photodiodes, Hall effect sensor, analogue and digital signals, analogue to digital conversion, PCM, LC resonance filters, the ideal operational amplifier, inverting amplifier, non-inverting amplifier, summing amplifier , real operational amplifiers, digital signal processing, combinational logic, sequential logic, astables, data communication sysytems, transmission media, time-division multiplexing, AM, FM) **Magnetic fields** (magnetic flux density, force on a current carrying wire, charged particles, electroamgnetic induction, flux linkage, Faraday's Law, Lenz's Law, ac, transformers) **Electric fields** (electric potential, electric fields) **Capacitors** (Energy stored, dielectrics, charging and discharging capacitors, time constant, time to halve)	**Engineering - option C** (inertia and kinetic energy, rotational motion, torque, work, power, flywheels, angular momentum, the first law of thermodynamics, non-flow processes, p-V diagrams, four stroke engines and indicator diagrams, engine powetr and efficiency, the second law of thermodynamics, reversed heat engines) **Gravitational fields** (gravitational field strength, gravitational potential, orbits) **Further mechanics** (circular motion, centripetal force & acceleration, SHM, mass-spring systems, simple pendulums, investigating simple pendulums, simple harmonic oscillators, free and forced vibrations)		**Medical Physics - option B** (Lenses, Physics of the eye, defects of vision, physics of the ear, intensity and loudness, physics of the heart, ultrasound, endoscopy, x-ray production, imaging, MRI, radiation, comparing imaging techniques **Nuclear Physics (**Rutherford scattering, nuclear radius, density, nuclear radiation, background radiation, intensity, decay, gamma radiation and the inverse square law, half-life, mass defect, binding energy, fission, fusion, fission reactors) **Thermal Physics** (thermal energy transfer, gas laws, Charle's Law, Boyles's Law, ideal gas equation, kinetic theory and the pressure of an ideal gas, kinetic energy of gas molecules, development of theories)	**Astrophysics - option A** (lenses, telescopes, parallax & parsecs, magnitude, stars as black bodies, spectral classes, H-R diagram, evolution of stars, supernovae, neutron stars, black holes, doppler effect, red-shift, Big Bang, Binary stars, quasars, exoplanets)