

Year 13 Physics Curriculum

	AUT1	AUT2	SPR1	SPR2	SUM1	SUM2
Topic:	Further mechanics and EM Fields and Particle Physics		Gravitational Fields, Space, Nuclear Physics, Thermal Physics and Oscillations		Working as a physicist and core practical's review	
Knowledge Covered:	Momentum in 2 Dimensions Circular motion Electric fields Magnetic fields Electromagnetic Induction Faradays Law Lenz's Law Capacitors Root Mean Square Voltage Rutherford Scattering Linear accelerator Cyclotron – Circular particle accelerators Fundamental particles $E=MC^2$ Matter and antimatter Particle interactions		Inverse square law of gravity Gravitational fields and electric fields Light Intensity Parallax Distance to stars HR diagram Doppler effect Hubble's Law Fate of the universe Binding energy Fission and fusion Radioactivity Half-life and decay Heat and temperature Kinetic theory Specific Heat Capacity and Specific Latent Heat Ideal gases Black body radiation Oscillations Simple harmonic motion Resonance 1. know and understand the distinction between base and derived quantities and their SI units 2. be able to demonstrate their knowledge of practical skills and techniques for both familiar and unfamiliar experiments 3. be able to estimate values for physical quantities and use their estimate to solve problems 4. understand the limitations of physical measurement and apply these limitations to practical situations 5. be able to communicate information and ideas in appropriate ways using appropriate terminology 6. understand applications and implications of science and evaluate their associated benefits and risks 7. understand the role of the scientific community in validating new knowledge and ensuring integrity 8. understand the ways in which society uses science to inform decision making		Core practical's 1 Determine the acceleration of a freely-falling object. 2 Determine the electrical resistivity of a material. 3 Determine the e.m.f. and internal resistance of an electrical cell. 4 Use a falling-ball method to determine the viscosity of a liquid. 5 Determine the Young modulus of a material 6 Determine the speed of sound in air using a 2-beam oscilloscope, signal generator, speaker and microphone. 7 Investigate the effects of length, tension and mass per unit length on the frequency of a vibrating string or wire. 8 Determine the wavelength of light from a laser or other light source using a diffraction grating. 9 Investigate the relationship between the force exerted on an object and its change of momentum. 10 Use ICT to analyse collisions between small spheres, e.g. ball bearings on a table top. 11 Use an oscilloscope or data logger to display and analyse the potential difference (p.d.) across a capacitor as it charges and discharges through a resistor. 12 Calibrate a thermistor in a potential divider circuit as a thermostat. 13 Determine the specific latent heat of a phase change. 14 Investigate the relationship between pressure and volume of a gas at fixed temperature. 15 Investigate the absorption of gamma radiation by lead. 16 Determine the value of an unknown mass using the resonant frequencies of the oscillation of known masses.	

Online resources:	Seneca Learning: Edexcel Alevel Physics https://www.physicsandmathstutor.com/physics-revision/a-level-edexcel/		