A LEVEL PHYSICS
(Edexcel specification)

This course is an excellent preparation for physics and engineering degrees. However, the knowledge and understanding developed is helpful in a wide range of careers, from medicine to architecture, music technology or creative design. Physics is also highly desirable for accounting and finance degrees!

Intending students should enjoy the subject and welcome the prospect of challenge in their learning. A good grasp of mathematics, in particular an aptitude for algebra, is an important prerequisite for success.

Some practical/theoretical sessions may need to be completed after normal school hours.

Topics studied in year 1:

1 Working as a Physicist – Practical physics skills which will be covered within lessons and examined.
2. Mechanics - Rectilinear motion, forces, energy, power, momentum, moments.
3 Electric Circuits - D.C. circuits, Ohm's law, Kirchhoff's laws, power, resistivity and conductivity.
4 Materials – Density, upthrust, viscous drag, Hooke's law and Young modulus.
5. Waves and Particle Nature of light – Wave properties, refractive index, lenses, plane polarization, photoelectric effect and atomic line spectra.
6 Further Mechanics Circular motion, momentum in two dimensions, impulse.

Topics studied in year 2:

7 Electric and Magnetic Fields - Uniform and radial electric fields, capacitance, magnetic fields, induction, Lenz's law, Faraday's law and A.C. current.
8 Nuclear and Particle Physics - Particle accelerators and detectors, atomic structure, the quark-lepton model and de Broglie's equation.
9 Thermodynamics - Specific heat capacity, internal energy and the ideal gas equation. Stefan-Boltzmann law and Wien's law.
10 Space – Luminosity, trigonometric parallax, Hertzsprung-Russell diagram and Hubble's law.
11 Nuclear Radiation – Fission, fusion, binding energy and radioactive decay equations.
12 Gravitational fields – Gravitational force and potential in radial fields.
13 Oscillations – Simple harmonic motion, oscillations and resonance

Assessment schemes:

Exams	Marks	Length	Weighting	Topics
1 A Level Paper 1	90	1 hr 45 mins	30%	1, 2, 3, 6, 7, 8
2 A Level Paper 2	90	1 hr 45 mins	30%	1, 4, 5, 9, 10, 11, 12
3 A Level Paper 3	120	2 hr 30 mins	40%	General paper covering all topics + practical methods & application of Physics
3 Practical Endorsement	N/A	(throughout course)	0%	16 core practical tasks (minimum requirement is 12)

GCSE requirements:
*Science – grade 6:6 in GCSE Combined Science, **or** a grade 6 in GCSE Physics*
English Language – grade 4
Mathematics – grade 6

Please note: Students who wish to take two or more from Biology, Chemistry, Physics, Maths and Further Maths will need at least one grade 7 in a relevant science or Maths.

Students who achieve a grade 6 in Physics/6:6 in combined science GCSE, or who do not also take Maths A level (recommended), will have an additional period 6 lesson on their timetable once a week.