

PHYSICS CURRICULUM MAP			
A. FORMAL KEY STAGE FIVE PHYSICS ADVANCED LEVEL CURRICULUM			
Core Threads		By the end of key stage FIVE we want all students of Physics to know and do the following key things: Confident knowledge, understanding, and application of higher-level Physics concepts; analysis of qualitative & quantitative data; well-reasoned judgements; evaluate & refine practical procedure independently; link fundamental properties; carrying through reasonable estimations; complex mathematical techniques.	
Prior Knowledge		In KS5, students of Physics will build on the following prior learning : GCSE knowledge, understanding, and application of key Physics ideas and practical procedures; justification of processes and variables; GCSE mathematical skills, evaluation of data; composing extended responses; offering justified conclusion; analysis of data with explanation of trends; use of key apparatus and techniques.	
Future Knowledge		The Curriculum in KS5 Physics will prepare students for the following future learning : Undergraduate study in Physics-related areas; understanding beyond specification, such as Engineering, Medical Physics, Astronomy, Mechanics; appreciation of wider Physics-related reading and linked theory; independent practical investigation; appreciation of the science behind technological advancements.	
Year 12	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
	T1	Foundations of Physics. Introduction to mathematical skills, appreciation of uncertainties and precision , and analysing quantitative data. Development of practical skills; planning investigations; evaluating ; select equipment. Electrons, waves and photons - Recalling and developing understanding of GCSE knowledge. Forces and motion – motion, suvat, practical investigation into freefall	Practical skills, Development of practical Test
	T2	Electrical circuits and resistance . Required practicals on resistivity and IV characteristics, electrical circuits problem solving. Forces and motion – projectile motion, stopping distances, moments, mass & weight	Test – Electricity & Motion
	T3	Forces in action, work energy and power, materials . Required practical on Young's Modulus and Springs. Development Scientist . Waves properties and electromagnetic waves . Applying this knowledge to more complex problems; and investigating Wave Phenomena.	Test – Forces, materials & waves
	T4	Waves – stationary waves, diffraction & interference. Wave Frequency Engineer . Forces – Newton's Laws of motion and momentum , including collisions. Materials Scientist .	Test – Physics challenge
	T5	Quantum Physics – wave particle duality & photons. Capacitance. Consider practical uses of electricity in the wider world . Electrical Engineer .	Test – AS Breadth in Physics
	T6	AS recap/ revision. Thermal Physics – Temperature & kinetic theory - links to chemistry. Electric fields – Coulomb's Law Mechanical Engineering .	Year 12 Mock Examinations
Year 13	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
	T1	Thermal Physics – Ideal gases and gas laws. Consolidate Thermal Physics knowledge, conclusions from data and evaluating theories. Required Practical on gas Laws. Circular motion – with links to previous forces topic. Electromagnetism - Electric & Magnetic fields. Recall and develop GCSE Physics and Chemistry knowledge and apply particle theory to a range of concepts. Chemical engineer	Electric Fields, Thermal Physics & Circular motion test
	T2	Oscillations – Simple Harmonic motion, with links to prior knowledge on waves and circular motion. Required practicals using springs and pendulum. Nuclear & particle Physics – Atoms, antimatter, quarks and decay. Gravitational Fields. Appreciate use of oscilloscope in key topics . Electronics Engineering . Nuclear Physics – Apply safe techniques handling radioactive materials. Required Practical on Inverse square law Gamma, applying this to wider context . Nuclear Physicist .	Nuclear, Particle, Oscillations & Gravitational fields test
	T3	Medical imaging – Tracers, X-rays, CAT Scans – links to medical scientist . Astrophysics & Cosmology – Stars, Energy levels. Astrophysicist .	Year 13 Mock Examinations
	T4	Medical imaging – Ultrasound & Gamma camera and ethics . Cosmology – Hubble's Laws & Evolution of the Universe	Astrophysics & Cosmology with Medical Imaging test
	T5	Independent study skills developed. Focus on synthesis and application of learned understanding. Recall of key concepts and knowledge.	External Examinations
B. WIDER KEY STAGE FIVE PHYSICS CURRICULUM			
- Where appropriate, external events, such as lectures, and guest speakers – to broaden understanding of key concepts and Physics in the wider world - Access to Physics Review Magazines and independent progress through online articles to challenge and extend learners - Critical thinking and problem solving in readiness for undergraduate study embedded into lessons and enrichment activities			

PHYSICS CURRICULUM MAP

A. FORMAL KEY STAGE FOUR PHYSICS GCSE LEVEL CURRICULUM

Core Threads	By the end of key stage FOUR we want all students of Physics to know and do the following things: Knowledge, apply & understand ideas in Physics, such in Waves, Forces, Energy and Electromagnets; evaluate and refine practical procedure, demonstrate high-level practical competencies in Required Practical's for Physics; interpret & analyse qualitative & quantitative data; draw coherent conclusions; offer well-reasoned judgements.
Prior Knowledge	In KS4, students of Physics will build on the following prior learning : Build on Key Stage Three understanding of key 'Big Ideas' in Physics, such as in Waves, Forces, Energy and Electromagnets; existing skills of analysis and evaluation; simple evaluations of practical procedures; knowledge of key equipment; consideration of variables, such as required for practical investigations.
Future Knowledge	The Curriculum in KS4 Physics will prepare students for the following future learning : Utilise knowledge in order to offer well-reasoned explanations; independently refine and evaluate practical procedure; high-level data analysis skills.

	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISTED, AND LEARNT	Common Assessment End Points
Year 10	T1	Electricity : Current (AC/DC) electricity, circuits (series and parallel) and their components, application of Ohms law. Required Practical: Resistance, IV Characteristics. Maths skills e.g., manipulating formulae and interpreting graphs. Electrical Engineering .	Year 10 Physics Assessment Termly Test - 1
	T2	Electricity: Domestic electricity & National Grid , safety, and energy transfers, static and fields . National Grid Network Planner . Waves: Properties of waves (transverse/longitudinal), sound and seismic waves and their applications.	Year 10 Physics Assessment Termly Test - 1
	T3	Waves 1: Required Practical: Wave properties . Properties uses of electromagnetic waves . Working Scientifically: planning & evaluating methods, recording & analysing data. Maths skills: wave equation. Oceanographer . Civil Engineering .	Year 10 Physics Assessment Termly Test - 2
	T4	Forces 1: Balanced and Unbalanced, Contact and Non-Contact Forces. Free body diagrams; scalars & vectors ; Maths skills: manipulating formulae, Pythagorean triangles (resolving forces). Structural Engineering .	Year 10 Physics Assessment Termly Test - 2
	T5	Forces: Newton's Laws of Motion . Exam skills including extended response questions.	End of Year exam
	T6	Forces 2: Speed, velocity, and acceleration . Momentum , Required Practical: on the topic of Acceleration. Road Safety Analyst .	Year 10 Physics Assessment Test 3
	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISTED, AND LEARNT	Common Assessment End Points
Year 11	T1	Waves 2: Reflection, refraction, absorption and transmission of EM waves , use of lenses & ray diagrams , understanding of colour. Required Practical – Light reflection and refraction. applications of electromagnetic waves, ionising radiation . Thermal radiation required practical. Optometry .	Year 11 Physics Assessment Termly Test - 1
	T2	Forces 2: Elastic forces, moments and levers . Required Practical on the topic of Hooke's Law. Revision and consolidation for mock examinations. Synthesising and recalling key knowledge and concepts in Physics thus far. Materials Scientist .	Year 11 Internal Mock Examination
	T3	Pressure in fluids e.g., liquids and gases in the atmosphere. Magnetism and Electromagnetism Embedding and recalling key ideas and concepts and learning on the topic of Magnetism and Electromagnetism. Developing revision techniques, practising application skills and exam technique. Communications .	Year 11 Physics Assessment Termly Test - 2
	T4	Space: Solar system, life cycle of stars . Satellites , orbital motion, theory of universe – including the big bang theory and red shift. Working Scientifically: scientific method over time, use of models, power & limitations of science. Astronomer	Year 11 Physics Assessment Termly Test - 2
	T5	Revision and consolidation: Managing & making links between knowledge & concepts. Additional support sessions offered. Practice paper answers continue to be composed. Preparing for the challenge of public examinations.	External Examinations

B. WIDER KEY STAGE FOUR PHYSICS CURRICULUM

- Cross-curricular links with Chemistry, Biology, Geography, Drama and Mathematics
- Links to careers in areas such as Medicine, Technology, Engineering, Education, Sports, Music, Space Industries, Military – in lessons and via suggested wider reading activities
- Links to cross-curricular Science Technology Engineering and Mathematics (STEM) activities and projects in school -Y12 and Y13 Science Live Lectures