# PHYSICS

# YEAR 13

## AUTUMN 1

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| 1. Experiment design, 2&3. Data & Graphs, 4. Error Analysis, 5. Uncertainty calculations, 6. Evaluating & concluding.<br>1. Gravitational Fields, 2. Gravitational field strength, 3, Gravitational potential. | 1 Uniform Circular Motion, 2 Centripetal Acceleration, 3 On The Road, 4 At a fairground, 5 Oscillations, 6 Principles of SHM, 7 More about sine waves, 8 Applications of SHM, 9 Energy and SHM, 10 Forced Vibrations and resonance, 11 internal Energy and Temperature. | Prior Learning<br>Year 12 mechanics, frequency, time period, particle model, SHC, SLH. |

## AUTUMN 2

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| , 4. Orbits, 5. Electric Fields, 6. Electric Potential, 7. Comparing electric and gravitational fields 1. Capacitors, 2. Energy stored by capacitors, 3. Dielectrics, 4. Charging and discharging, 5. Time constant and time to halve. | 12 Specific Heat Capacity, 13 Change of State 14 The experimental gas laws, 15 The ideal gas law, 16 The Kinetic Theory of gases, 1 Current carrying conductors in a magnetic field, 2 Moving charges in a magnetic field, 3 Charged particles in circular orbits, 4 Generating Electricity, 5 The laws of electromagnetic induction. | Prior Learning<br>Motor & generator effect. |

## SPRING 1

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| 1. Lenses, 2. Optical telescopes, 3. Comparing telescopes, 4. Non-optical telescopes, 5. Parallax and Parsecs, 6. Magnitude 7. Stars as Black Bodies, 8 Stellar Spectral Classes, 9. The Hertzsprung-Russell Diagram, 10. Evolution of Sun-like Stars. | 6 The alternating current generator, 7 Alternating Current and power, 8 Transformers 01 The-discovery-of-the-nucleus, 02 Nuclear-radius, 03 The-properties-of-alpha-beta-and-gamma, 04 More-about-alpha-beta-and-gamma, 05 Radioactive-Decay, 06 More-about-decay-modes, 07 The-theory-of-radioactive-decay. | Prior Learning<br>Fission & fusion (triple course), Alpha, Beta & Gamma radiation properties, Alpha scattering, nuclear structure. Yr. 12 Particles. |

## SPRING 2

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| 11. Supernovae, Neutron Stars and Black Holes, 12. Doppl.er Effect and Red Shift, 13. The Big Bang Theory, 13. Detection of Binary Stars, Quasars and Exoplanets. | 08 The-Dangers-of-Radioactivity, 09 Radioactive-isotopes-in-use, 10 Energy-and-mass, 11 Binding-energy, 12 Fission-and-fusion, 13 The-thermal-nuclear-reactor. | Prior Learning<br>Fission & fusion (triple course), Alpha, Beta & Gamma radiation properties, Alpha scattering, nuclear structure. Yr. 12 Particles. |

## SUMMER 1

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| Revision of all KS5 content | Prior Learning<br>Syllabus from Y12&13 Physics. |

### CAREERS LINKS

Engineer, pilot, architect, electrician, computer science, information technology, law, accountancy.

### CHARACTER LINKS

Scientific Investigations to develop attention to detail, accuracy of measurement, analysis of risk and errors. Evaluation of performance and identifying improvements (performance virtues). Developing teamwork, resilience, confidence and critical thinking (intellectual virtues).

### KEY ASSESSMENT DATES

Pupils complete assessments in line with the KS5 assessment calendar. There are also extra end of topic assessments. During year 13 multiple mock assessments in year 13 are set out with the standard year 13 mock fortnight.