

**A-Level Physics Overview: Year 1**

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| Term | Mr Abbott/Mr Cooper  Modules 1,2 and 3 | Mr Seal/Mr Watts  Modules 1,2 and 4 | Key Skills / Coursework / PSAs / Deadlines |
| 1 | **Module 2**  **Chapter 2 Basic Maths skills (1st Week only)**  2.1 Quantities and units  2.2 Derived units.  Maths skills assessment.  **Module 3**  **Chapter 3 Motion**  3.1 Distance and speed  3.2 Displacement and velocity  3.3 Acceleration  3.4 Velocity–time graphs  3.5 Equations of motion  3.6 Car stopping distances  3.7 Free fall and g  3.8 Projectile motion  Chapter 3 Motion Assessment | **Module 4**  **Chapter 11 Waves 1**  11.1 Progressive waves  11.2 Wave properties  11.3 Reflection and refraction  11.4 Diffraction and polarisation  11.5 Intensity  11.6 Electromagnetic waves  11.7 Polarisation of electromagnetic waves  11.8 Refractive index  11.9 Total internal reflection  Chapter 11 Waves assessment | **Basic maths skills test.**  PAG 1.2 Investigating Terminal Velocity  PAG 5.3 Determining the frequency and wavelength of a wave using an oscilloscope |
| 2 | **Chapter 4 Forces in action:**  4.1 Force, mass, and weight  4.2 Centre of mass  4.3 Free-body diagrams  4.4 Terminal velocity  4.5 Moments  4.6 Couples and torques  4.7 Triangles of forces  4.8 Density and pressure  4.9 Pressure in fluids and Archimedes' principle  Chapter 4 Forces in Action Assessment | **Chapter 12 Waves 2**  12.1 Superposition of waves  12.2 Interference  12.3 The Young double-slit experiment  12.4 Stationary waves  12.5 Harmonics  12.6 Stationary waves in air columns  Chapter 12 Assessment | PAG 5.1 Determining the wavelength of light with a diffraction grating |
| 3 | **Chapter 5 Work, energy and power**  5.1 Work done and energy  5.2 Conservation of energy  5.3 Kinetic energy and gravitational potential energy  5.4 Power and efficiency  Chapter 5 Work, Energy and Power Assessment  **Chapter 6 Materials**  6.1 Springs and Hooke's law  6.2 Elastic potential energy  6.3 Deforming materials  6.4 Stress, strain, and the Young modulus  Chapter 6 Materials Assessment | **Chapter 13 Quantum Physics**  13.1 The photon model  13.2 The photoelectric effect  13.3 Einstein's photoelectric effect equation  13.4 Wave-particle duality  Chapter 13 Quantum Physics Assessment  **Chapter 8 Charge and current**  8.1 Current and charge  8.2 Moving charges  8.3 Kirchhoff's first law  8.4 Mean drift velocity  Chapter 8 Charge and Current Assessment | PAG 6.1 Determining the Planck Constant  PAG 2.1 Determining the Young’s Modulus of a Metal |
| 4 | **Chapter 7 Laws of motion and Momentum**  7.1 Newton's first and third laws of motion  7.2 Linear momentum  7.3 Newton's second law of motion  7.4 Impulse  7.5 Collisions in two dimensions  Chapter 7 Laws of Motion and Momentum Assessment | **Chapter 9 Energy, power and resistance**  9.1 Circuit symbols  9.2 Potential difference and electromotive force  9.3 The electron gun  9.4 Resistance  9.5 I-V characteristics  9.6 Diodes  9.7 Resistance and resistivity  9.8 The thermistor  9.9 The LDR  9.10 Electrical energy and power  9.11 Paying for electricity  Chapter 9 Energy, Power and Resistance Assessment | PAG 3.2 Investigating the Electrical Characteristics of Non-Ohmic Components  PAG 4.1 Investigating Resistance  PAG 3.1 Determining the resistivity of a metal |
| 5 | **Module 5 (year 2 precursor)**  **Chapter 16 Circular motion**  16.1 Angular velocity and the radian  16.2 Angular acceleration  16.3 Exploring centripetal forces | **Chapter 10 Electrical circuits**  10.1 Kirchhoff's laws and circuits  10.2 Combining resistors  10.3 Analysing circuits  10.4 Internal resistance  10.5 Potential divider circuits  10.6 Sensing circuits  Chapter 10 Electrical Circuits Assessment |  |
| 6 | **Revision of module 3 in preparation for end of year 1 assessments.**  Motors investigation  **Chapter 20**  20.1 Astronomical distances  20.2 The Doppler effect  20.3 Hubble's law | **Revision of module 4 in preparation for end of year 1 assessments**.  Motors investigation  **Chapter 20**  20.4 The Big Bang theory  20.5 Evolution of the Universe | **End of year 1 assessments**  PAG 13.1 Investigating the effect of load on the efficiency of a motor |



**A-Level Physics Overview: Year 2**

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| Term | Teacher 1  Modules 1,2 and 5 | Teacher 2  Modules 1,2 and 6 | Key Skills / Coursework / PSAs / Deadlines |
| 1 | **Module 5**  **Chapter 14 Thermal Physics**  14.1 Temperature  14.2 Solids, liquids and gases  14.3 Internal energy  14.4 Specific heat capacity  14.5 Specific latent heat  **Chapter 15 Ideal Gasses**  15.1 The kinetic theory  15.2 Gas laws  15.3 Root mean square speed  15.4 The Boltzmann constant  Chapter 14/15 Assessment | **Module 6**  **Chapter 21 Capacitance**  21.1 Capacitors  21.2 Capacitors in circuits  21.3 Energy stored by capacitors  21.4 Discharging capacitors  21.5 Charging capacitors  21.6 Uses of capacitors  **Chapter 22 Electric fields**  22.1 Electric fields  22.2 Coulomb's law  22.3 Uniform electric fields and capacitance  22.4 Charged particles in uniform electric fields  22.5 Electric potential and energy  Chapter 21/22 assessment | PAG 8.1 Estimating absolute zero from gas pressure and volume  PAG 9.1 Investigating the charging and discharging of capacitors  PAG 9.2 Investigating capacitors in series and parallel |
| 2 | **Chapter 16 recap**  **Chapter 17 Oscillations**  17.1 Oscillations and simple harmonic motion  17.2 Analysing simple harmonic motion  17.3 Simple harmonic motion and energy  17.4 Damping and driving  17.5 Resonance  Chapter 16/17 assessment | **Chapter 23 Magnetic fields**  23.1 Magnetic fields  23.2 Understanding magnetic fields  23.3 Charged particles in magnetic fields  23.4 Electromagnetic induction  23.5 Faraday's law and Lenz's law  23.6 Transformers  Chapter 23 assessment | PAG 10.1 Factors affecting simple harmonic motion  PAG 11.1 Investigating transformers |
| 3 | **Chapter 18 Grav fields**  18.1 Gravitational fields  18.2 Newton's law of gravitation  18.3 Gravitational field strength for a point mass  18.4 Kepler's laws  18.5 Satellites  18.6 Gravitational potential  18.7 Potential energy  Chapter 18 assessment  **Chapter 19 Stars**  19.1 Objects in the universe  19.2 The life cycle of stars  19.3 The Hertzsprung-Russell diagram  19.4 Energy levels in atoms  19.5 Spectra  19.6 Analysing starlight  19.7 Stellar luminosity  Chapter 19 assessment | **Chapter 25 Radioactivity**  25.1 Radioactivity  25.2 Nuclear decay equations  25.3 Half-life and activity  25.4 Radioactive decay calculations  25.5 Modelling radioactive decay  25.6 Radioactive dating  **Chapter 26 Nuclear Physics**  26.1 Einstein's mass-energy equations  26.2 Binding energy  26.3 Nuclear fission  26.4 Nuclear fusion  Chapter 25/26 assessment | PAG 7.2 Investigating the absorption of alpha, beta and gamma rays by appropriate materials. |
| 4 | **Chapter 24 Particle Physics**  24.1 Alpha-particle scattering experiment  24.2 The nucleus  24.3 Antiparticles, hadrons, and leptons  24.4 Quarks  24.5 Beta decay  **Modelling Physics Mock** | **Chapter 27 Medical imaging**  27.1 X-rays  27.2 Interaction of X-rays with matter  27.3 CAT scans  27.4 The gamma camera  27.5 PET scans  27.6 Ultrasound  27.7 Acoustic impedance  27.8 Doppler imaging  **Exploring Physics Mock** |  |
| 5 | **Unified Physics Mock**  **Revision** | **Unified Physics Mock**  **Revision** |  |