**OCR A Physics A Level - Overview 2022-23**

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| **Year Group** | **Autumn Term** | **Spring Term** | **Summer Term** |
|  | **Term 1** | **Term 2** | **Term 3** | **Term 4** | **Term 5** | **Term 6** |
| **Year 12***The first year of the course will cover the core content which underpins the A Level (modules 2, 3 and 4).**Module 1 (practical component) also runs throughout both years of the course and is a pass or fail aspect (not graded). Elements of this module come up in the written exams too, similar to the RP’s in GCSE.* | **Module 1 – Practical Skills*** Planning an experiment
* Recording and processing data
* Analysing results
* Evaluating and drawing conclusions
* Practice PAG

**Module 2 – Foundations in Physics*** Quantities & Units
* Estimates
* Errors & Uncertainties
* Graphical Analysis
* Graphing uncertainties
* Trigonometry
* Scalars & Vectors
* Resolving vectors
 | **Module 4 – Electricity*** Circuit diagrams
* Current & charge
* Drift velocity
* EMF
* Resistivity
* Conductors
* IV characteristics
* Power
* Domestic electricity
* Series & parallel
* Potential dividers
* Internal resistance
* Circuit analysis

**Module 3 – Energy*** Energy & power
* KE & GPE
* Conservation of Energy
* Efficiency

Revision + mock exams | **Module 4 – Waves*** Frequency & Intensity
* Electromagnetic waves
* Polarisation
* Refraction
* Total internal reflection
* Superposition
* Diffraction
* Two source interference
* Young’s experiments
* Diffraction gratings

**Module 3 – Materials*** Hooke’s Law
* Deformation
* Stress & Strain
* Young’s Modulus
* Stress-strain graphs
 | **Module 3 – Motion*** Acceleration
* Acceleration due to gravity
* Projectile motion
* D-t and V-t graphs
* Stopping distances

**Module 3 – Forces*** Net forces
* Equilibrium
* Moments & torques
* Density & pressure
* Drag & terminal velocity

**Module 3 – Newton’s Laws*** Momentum

Impulse | **Module 4 – Quantum*** Photons
* Planck’s constant
* Photoelectric effect
* Wave-particle duality

Revision + mock exams | (Start Y13 content)**Module 6 – Nuclear Physics*** Atomic structure
* The standard model
* The nucleus
* Matter & anti-matter
* Radioactivity
* Decay equations
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| **Year 13***Students will now use their Year 1 knowledge to access Year 2 content.* *Module 5 Module 6 content will alternate so that in-year exams can contain elements from both modules.**Module 1 (practical component) continues.*  | **Module 5 – Thermal Physics*** Temperature
* phases of matter
* internal energy & Brownian motion
* Specific Heat Capacity
* Specific Latent Heat
* Kinetic Theory
* Gas Laws
* Ideal Gas Equation
* Boltzmann constant

**Module 6 – Capacitors*** Series & Parallel
* Energy stored
* Charging & discharging
* Time constants
 | **Module 5 – Orbital Motion*** Circular motion
* Centripetal acceleration
* Centripetal force
* Simple harmonic motion
* Damping
* Resonance

Revision + mock exams**Module 5 – Gravitational Fields*** Newton
* Kepler
* GPE

**Module 6 – Electric Fields*** Coulomb
* Uniform fields
* EPE

  | **Module 6 – Magnetic Fields*** Flux density
* Forces on charged particles
* Motion of charged particles
* Induction
* Flux linkage
* Faraday & Lenz
* Generators & transformers

**Module 6 – Medical Physics*** X-rays
* CAT scans
* Gamma cameras
* PET scans
* Ultrasound
* Flux density

**Module 6 – Nuclear physics continued*** Nuclear forces & density
* Exponential decay
* Radioactive dating
* Binding energy
* Fission
* Fusion
 | Revision + mock exams**Module 6 – Astrophysics** * The solar system
* Astronomical distances
* Star formation
* Radiation & luminosity
* Wein’s Law & Stefan’s constant
* Analysing starlight
* Red shift & CMBR
* Hubble & the Big Bang
* Dark matter & dark energy
 | Catch-up, Revision + Exams |  |