Curriculum Map: OCR A level Physics; Modelling Physics

THE KING'S ACADEMY
Emmanuel Schools Foundation

A level Physics teaches you the knowledge to understand how things work, problem solving skills, and creative ways of thinking. This, along with mathematical, analytical and practical competences you learn, are highly valued skills allowing you to access a wide range of careers.

Required practical

Academy Rehearsal Exams

Other Assessment Points

Unit Link

Exams

Year 13

Autumn

5.2 Circular Motion

How is the motion of objects on circular paths analysed?

5.1 Thermal Physics

What is ideal gas equation and kinetic theory of gases?

Which material properties relate to the internal energy of materials?

How do safety features in cars work to try and reduce injury?

3.5 Newton's Laws of Motion and Momentum

How can we analyse forces in collisions?

How do Newton's laws be used to predict motion?

3.4 Materials

How does Young's modulus help identify suitable materials?

Progression Week

AP 4 - Year 12 Rehearsal Exams

Spring

5.3 Oscillations

What is simple harmonic motion and how is it modelled?

What is damping and resonance?

AP5

What is Newton's law of gravitation?

5.4 Gravitational Fields

What is gravitational potential and escape velocity?

How can planetary and satellite motion be analysed?

5.5 Astrophysics & Cosmology

What is the evolution of stars and the Chandrasekhar limit?

AP6 - Year 13 Rehearsal Exams

Summer

3.2 Forces in Action

How can Archimedes' principle be used?

What is the importance of work and energy?

How to calculate the energy in a store?

How can the principle of conversation of energy be applied?

3.3 Work, Energy, Power

How can material behaviour be modelled?

AP3

What can be learnt from systems in equilibrium?

AP2

Year 12

Spring

2.3 Nature of Quantities

How can non-uniform acceleration be explained ?

How can motion be described and analysed using SUVAT?

3.1 Motion

How can vectors be combined and resolved?

AP1

2.2 Measurements and Analysing Data

Throughout Physics

2.1 Physical Quantities & Units

What are the conventions and ideas underpinning experimentation?

How are units related to each other?

Autumn

How can spectra provide data on star composition?

AP7

How do we use Wien's law and Stefan's law to identify star types?

What are theories for universe formation and evolution?

Curriculum Map: OCR A level Physics; Exploring Physics

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Required practical
Academy Rehearsal Exams
Other Assessment Points
Unit Link

Year 13

Autumn

- How can exponential data be analysed? — 6.1 Capacitors
- How can Coulomb's be used to explain particle movement in fields? — 6.2 Electric Fields
- What is the relationship between electric fields and capacitors? — *AP5*
- How can FLHR be used to predict particle movement in accelerators? — 6.3 Electromagnetism
- How does electromagnetic induction work?

Spring

- What are the fundamentals of particle physics? — 4.5 Quantum Physics
- What are the behaviours of a capacitor?
- How can wave-particle duality be demonstrated?
- What does the photoelectric effect demonstrate?
- What is the principle of superposition? — 4.4 Waves
- What are the critical angle and total internal reflection?
- What are the properties and behaviours of waves?

Progression Week

AP 4 - Year 12 Rehearsal Exams

AP6 - Year 13 Rehearsal Exams

Summer

- How is the resistivity of a material determined? — 4.2 Energy, Power, Resistance
- How is energy use related to device efficiency and cost?
- How do we apply the rules for series and parallel circuits?
- What is internal resistance and 'lost volts'? — 4.3 Electrical Circuits
- How can potential dividers be used in control circuits? — *AP3*
- What is the electromotive force? — *AP2*

Year 12

Spring

- What is significance drift velocity of charge carriers? — 4.1 Charge & Current
- How are Kirchhoff's law applied to circuits?
- How can vectors be combined and resolved? — 2.3 Nature of Quantities
- What are the conventions and ideas underpinning experimentation? — 2.2 Measurements and Analysing Data — *AP1*
- How are units related to each other? — 2.1 Physical Quantities & Units — *Throughout Physics*

Autumn

- How does the Doppler effect apply to ultrasound scans? — 6.5 Medical Imaging
- How do X-rays, CAT and PET scans work? — 6.4 Nuclear & Particle Physics — *AP7*
- How model the behaviour of radioactive isotopes?

Exams