



STEP UP TO 6TH FORM

KIMBERLEY SCHOOL TRANSITION INFORMATION

Physics A Level

COURSE DETAILS

UNIT 1

Forces & Motion

- Kinematics and dynamics
- Linear and projectile motion
- Motion with non-uniform acceleration
- Density and pressure
- Work, energy and power
- Springs and mechanical properties of materials
- Newton's laws of motion and momentum

Electrons, Waves and Photons

- Charge, current, electromotive force, potential difference and power
- Resistivity and resistance
- Series and parallel circuits
- Potential dividers
- Wave motion
- Electromagnetic waves
- Stationary waves and superposition
- Quantum physics
- Photons and the photoelectric effect

UNIT 2

Particles and Medical Physics

- Capacitors
- Coulomb's law
- Uniform electric fields and electric potential energy
- Magnetic fields
- Electromagnetism
- The nuclear atom
- Fundamental particles
- Radioactivity
- Nuclear fission and fusion
- Using X rays
- Diagnostic methods in medicine

UNIT 4

Newtonian World and Astrophysics

- States of matter
- Thermal properties of materials
- Ideal gases
- Circular motion and centripetal force
- Simple harmonic motion and damping
- Newton's law of gravitation
- Planetary motion
- Gravitational potential and energy
- Stars

EXAMS

- Modelling (37%) - 2hr15min
- Exploring (37%) - 2hr15min
- Unified (26%) - 1hr15min



LINK TO THE SPECIFICATION

See a detailed document of what we will cover in this course:

www.ocr.org.uk/Images/171726-specification-accredited-a-level-gce-physics-a-h556.pdf



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Physics A Level

Work you can do to prepare for A Level study

Wider Reading

- Rovelli, C. (2014). Seven Brief Lessons on Physics
- Czerski, H. (2016) Storm in a Teacup: The Physics of Everyday Life
- Bryson, B. (2004). A Short History of Nearly Everything
- Hawkin, S & Mlodinow, L. (2006). A Briefer History of Time
- Singh, S. (2004). Big Bang
- Miodownik, M. (2013). Stuff Matters
- Feynman, R. (1994). Six Easy Pieces

Recap of GCSE Maths Skills

A-Level Physics: Essential Maths Skills (CGP A-Level Physics)

Brushing up on GCSE Triple only Physics content

(especially if you did the Combined GCSE course)

- Space physics – life cycle of a star, orbits, the expanding universe
- Light properties – refraction, reflection, lenses and colour
- Black body radiation and infrared
- Electrical fields
- Boyle's law for gas pressure and volume
- Nuclear radiation in medicine
- Nuclear fission and fusion reactions
- Moments, levers and gears
- Conservation of momentum and impact forces
- Pressure in fluids and upthrust
- Ultrasound
- Seismic waves
- Generators and transformers

FILM & TV

- Interstellar (2014)
- Gravity (2013)
- The Theory of Everything (2014)
- Wonders of the Universe BBC (Documentary 2011)



USEFUL RESOURCE LINKS

- For content and wider reading www.khanacademy.org/
- For problem solving <https://isaacphysics.org>
- The University of Nottingham's www.sixtysymbols.com/
- Interactive simulations <https://phet.colorado.edu/en/simulations/category/physics>



YOUTUBE



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|-----------------------|--------------------|
| Veritasium | Reel Truth Science |
| ASAPscience | Steve Mould |
| SixtySymbols | Real Engineering |
| MinutePhysics | Up and Atom |
| TedEd | Smarter Everyday |
| The Royal Institution | |

PODCASTS



- Ologies with Alie Ward
- Science Vs
- The Curious Cases of Rutherford and Fry
- New Scientist Weekly
- The Life Scientific
- The Infinite Monkey Cage

