

AS

At AS, this specification introduces new topics as well as building on previous studies in physics. The two AS theory units provide alternative starting points for the AS course.

A2

At A2, this specification builds on AS content and includes optional topics.

Unit 1: Particles, Quantum Phenomena and Electricity

Written Paper, 1 hour 15 minutes

40% of total AS marks
20% of total A Level marks

- Structured questions
- All questions compulsory
- 70 marks

Available January and June

Subject Content

- The nucleus including particles, antiparticles and photons; hadrons and leptons; the quark model
- Quantum phenomena including photoelectricity, energy levels and photon emission, wave particle duality
- Electricity including electrical quantities, resistivity, circuits and components, alternating current

Unit 2: Mechanics, Materials and Waves

Written Paper, 1 hour 15 minutes

40% of total AS marks
20% of total A Level marks

- Structured questions
- All questions compulsory
- 70 marks

Available January and June

Subject Content

- Mechanics, including motion along a straight line, projectile motion, Newton's laws of motion, energy and power
- Properties of materials, including density and the Young modulus
- Waves, including longitudinal and transverse waves, progressive and stationary waves, refraction, diffraction and interference

Unit 3: Investigative and Practical Skills in AS Physics

Internal Assessment

20% of total AS marks
10% of total A Level marks

Either Route T, Centre marked:

- Practical Skills Assessment (PSA) +
- Investigative Skills Assignment (ISA)

Or Route X, AQA marked:

- Practical Skills Verification (PSV) +
- Externally Marked Practical Assessment (EMPA)

Available June

Practical Skills

- Selection and use of various equipment
- Processing of data
- Making observations and measurements
- Analysing and evaluation of results

Unit 4: Fields and Further Mechanics

Written Paper, 1 hour 45 minutes

20% of total A Level marks

Two sections:

- Section A – 25 multiple choice questions
- Section B – structured questions
- All questions compulsory
- 75 marks

Available January and June

Subject Content

- Further mechanics, including momentum, circular motion and simple harmonic motion
- Fields, including gravitational fields, electric fields, capacitors, magnetic fields, electromagnetic induction

Unit 5: Nuclear Physics, Thermal Physics and Optional Topic

Written Paper, 1 hour 45 minutes

20% of total A Level marks

Two sections:

- Section A – compulsory structured questions
- Section B – structured questions on an optional topic
- 75 marks

Available June

Subject Content

Section A – Nuclear and Thermal Physics

Probing the nucleus, radioactivity, nuclear instability, nuclear energy, thermal properties of materials, ideal gases, kinetic theory of gases

Section B options

One from:

A – Astrophysics

Lenses and optical and non-optical telescopes, classification of stars, cosmology

B – Medical Physics

Physics of the eye and ear, biological measurement, non-ionised and x-ray imaging

C – Applied Physics

Rotational dynamics, thermodynamics and engines

D – Turning Points in Physics

Discovery of the electron, wave particle duality, special relativity

Unit 6: Investigative and Practical Skills in A2 Physics

Internal Assessment

10% of total A Level marks

Either Route T, Centre marked:

- Practical Skills Assessment (PSA) +
- Investigative Skills Assignment (ISA)

Or Route X, AQA marked:

- Practical Skills Verification (PSV) +
- Externally Marked Practical Assessment (EMPA)

Available June

Practical Skills

- Selection and use of various equipment
- Processing of data
- Making observations and measurements
- Analysing and evaluation of results

Assessment Objectives

AO1

Recognise, recall and show understanding of scientific knowledge; select, organise and communicate relevant information in a variety of forms

AO2

Analyse and evaluate scientific knowledge and processes; apply scientific knowledge and processes to unfamiliar situations including those related to issues, assess the validity, reliability and credibility of scientific information

AO3

Demonstrate and describe ethical, safe and skilful practical techniques and processes, selecting appropriate qualitative and quantitative methods; make, record and communicate reliable and valid observations and measurements with appropriate precision and accuracy; analyse, interpret, explain and evaluate the methodology, results and impact of their own and others' experimental and investigative activities in a variety of ways