



GCE AS and A LEVEL PHYSICS (Wales) SUMMARY OF ASSESSMENT Summer 2022 only

This specification is divided into a total of 5 units, 2 AS units and 3 A2 units.
Weightings noted below are expressed in terms of the full A level qualification.

AS (2 units)

AS Unit 1
Motion, Energy and Matter
Written examination: 1 hour 30 minutes (80 marks)

A mix of short answer and extended answer structured questions with some set in a practical context.

AS Unit 2
Electricity and Light
Written examination: 1 hour 30 minutes (80 marks)

A mix of short answer and extended answer structured questions with some set in a practical context.

A Level (based on A2 units only in 2022)

A2 Unit 3

Oscillations and Nuclei

Written examination: 2 hours 15 minutes (100 marks) 125 UMS

41.67% of qualification

Section A: 80 marks

A mix of short answer and extended answer questions with some set in a practical context.

Section B: 20 marks – one comprehension question.

A2 Unit 4

Fields and Options

Written examination: 1 hour 35 minutes (80 marks) 125 UMS

41.67% of qualification

Section A: 80 marks

A mix of short answer and extended answer questions with some set in a practical context.

Section B: 20 marks (**not available in 2022**)

Choice of one option out of four:

Alternating Currents

Medical Physics

The Physics of Sport

Energy and the Environment

Unit 5

Practical examination (50 marks) 50 UMS

16.67% of qualification

This unit comprises two tasks.

- Experimental Task (25 marks)
- Practical Analysis Task (25 marks)

This adapted version of GCE Physics is for learners cashing-in the A level qualification in **2022 only**. Candidates entering the qualification in 2023 should use the approved [specification](#).

Summary of changes for 2022

AS Units 1 + 2: Written exams

Listed below are specification statements that will not be subject to assessment in the AS examinations in summer 2022.

AS Unit 1: Motion, Energy and Matter	
1.5	<p>Solids under stress</p> <p>(f) the features of a force-extension (or stress-strain) graph for a brittle material such as glass, to include</p> <ul style="list-style-type: none"> • elastic strain and obeying Hooke's law up to fracture • brittle fracture by crack propagation, the effect of surface imperfections on breaking stress, and how breaking stress can be increased by reducing surface imperfections (as in thin fibres) or by putting surface under compression (as in toughened glass or pre-stressed concrete) <p>(g) the features of a force-extension (or stress-strain) graph for rubber, to include</p> <ul style="list-style-type: none"> • Hooke's law only approximately obeyed, low Young modulus and the extension due to straightening of chain molecules against thermal opposition • hysteresis <p>SPECIFIED PRACTICAL WORK - Investigation of the force-extension relationship for rubber</p>
1.6	<p>Using radiation to investigate stars</p> <p>(e) the meaning of multiwavelength astronomy and that by studying a region of space at different wavelengths (different photon energies) the different processes which took place there can be revealed</p>
AS Unit 2: Electricity and Light	
2.2	<p>Resistance</p> <p>(i) the idea that the resistance of metals varies almost linearly with temperature over a wide range</p> <p>(j) the idea that ordinarily, collisions between free electrons and ions in metals increase the random vibration energy of the ions, so the temperature of the metal increases</p> <p>(k) what is meant by superconductivity, and superconducting transition temperature</p> <p>(l) the fact that most metals show superconductivity, and have transition temperatures a few degrees above absolute zero ($-273\text{ }^{\circ}\text{C}$)</p> <p>(m) certain materials (high temperature superconductors) having transition temperatures above the boiling point of nitrogen ($-196\text{ }^{\circ}\text{C}$)</p> <p>(n) some uses of superconductors for example, MRI scanners and particle accelerators</p> <p>SPECIFIED PRACTICAL WORK - Investigation of the variation of resistance with temperature for a metal wire</p>
2.7	<p>Photons</p> <p>(l) the demonstration of electron diffraction and that particles have a wave-like aspect</p>

	(m) the use of the relationship $p = \frac{h}{\lambda}$ for both particles of matter and photons(m)
	(n) the calculation of radiation pressure on a surface absorbing or reflecting photons
	SPECIFIED PRACTICAL WORK - Determination of h using LEDs
2.8	Lasers
	(f) the structure of a typical laser i.e. an amplifying medium between two mirrors, one of which partially transmits light
	(g) the advantages and uses of a semiconductor laser i.e. small, cheap, far more efficient than other types of laser, and it is used for CDs, DVDs, telecommunication etc.

A2 Units 3 + 4:

Written exams

Synoptic questions - AS content that is not developed or required for Units 3 and 4 will not be assessed in 2022.

Listed below are specification statements that will also not be subject to assessment in the A2 examinations in summer 2022.

A2 Unit 4: Fields and Options

Choice of 1 option from 4:

A: Alternating currents

B: Medical physics

C: The physics of sports

D: Energy and the environment

A2 Unit 5:

Practical Examination

Both the Experimental Task and the Practical Analysis Task will be assessed in 2022.

Further information

- The assessment of practical skills in the AS units and A2 units 3 and 4 will be unchanged.
- AS content that is not developed or required will not be assessed in A2 units.
- To facilitate the return of the Experimental Task assessment in 2022 we will put the following measures in place for the next academic year:
 - The "Instructions to Teachers" document will be released earlier than usual in October instead of January.
 - As usual the equipment list will be present for the Experimental Task in the "Instructions to Teachers" document. In addition to this advance notice for teachers will also be provided on the topic area(s) that will be assessed in the Practical Analysis Task. This will enable teachers to ensure that they

have taught all the necessary content. As always, the information in the "Instructions to Teachers" document must not be shared with candidates.

- The "Setting up Instructions" document will be released, as usual, one week before the Experimental Task examination. In addition, an extra page will be present containing advance notice for candidates on the topic area(s) that will be assessed in both the Experimental Task and the Practical Analysis Task. This page should be copied and given to candidates on receipt.
 - The timing of all of the Unit 5 exams will be as late as possible to allow centres as much teaching time as possible before the assessments take place.
- Monitoring visits will take place on the dates of the Experimental and Practical Analysis Tasks. There is an expectation that Lab books will be used in 2022 and they will be reviewed in the monitoring visit. However, monitors will only observe A2 content in the Lab books in 2022.

