

## Teacher Resource Bank

GCE Physics A

AS Scheme of Work



## **AQA Physics Specification A – Scheme of Work**

The following pages outline a suggested scheme of work.

The specification has been developed to provide opportunities for centres and teachers to find a starting point that they feel is the most suitable for their students.

At AS level, the two AS theory units (PHYA1 and PHYA2) provide alternative starting points for the course. PHYA1 invites teachers and students to start AS Physics by venturing into the field of Particle Physics and providing a new interest and dimension to their knowledge of the subject. PHYA2 allows teachers to plan progression from GCSE and to develop topics already familiar to their students. Teachers can choose to start the AS course with either unit as both of these units will be available in January and June.

Consequently, the following scheme of work provides one example of how to teach the course. The scheme shown starts with PHYA1. It is not a prescribed AQA approach to teaching but is provided in order to show a teaching approach to the course which people can consider or adapt to their needs and resources. Other examples may be provided in the future.

There is also a free scheme of work for GCE Physics Specification A which can be downloaded from the Nelson Thornes website; [http://www.nelsonthornes.com/aqaqce/physics\\_a.htm](http://www.nelsonthornes.com/aqaqce/physics_a.htm).

**Summary of Learning Activities**

(these should relate to Schemes of Work activities & should be completed following completion of the Scheme of Work) ✓

- very frequent - approximately every week                      rare - less than occasional  
 frequent - approximately 1 - 2 times per month                      never - never  
 occasional - approximately 1 - 2 times per term

	very frequent	frequent	occasional	rare	never		very frequent	frequent	occasional	rare	never
lectures		✓				dictation					✓
video			✓			group work		✓			
class discussion	✓					role-play					✓
I.T. usage	✓					visits				✓	
practical work	✓					student seminars					✓
individual research			✓			field course					✓
worksheets assignments	✓					other (please state)					

## Glossary of Terms

subject content	the area of the syllabus to be covered
work to be covered/student activities	topic area(s) and skills to be covered from within the syllabus area
teaching/learning method	how delivery of the topic area will be made/received
development skills	any skills development taking place including Key Skills where opportunities present themselves for skills development, they should be noted here students should be made aware of the opportunities for gaining evidence for Key Skills portfolios should they require it

Teaching week numbers relating to dates (**week commencing**)

Term 1				Term 2				Term 3			
	Aug 27	<b>9</b>	Nov 3	<b>16</b>	Jan 5	<b>22</b>	Feb 23	<b>28</b>	Apr 20	<b>33</b>	June 1
<b>1</b>	Sept 1	<b>10</b>	Nov 10	<b>17</b>	Jan 12	<b>23</b>	March 2	<b>29</b>	Apr 27	<b>34</b>	June 8
<b>2</b>	Sept 8	<b>11</b>	Nov 17	<b>18</b>	Jan 19	<b>24</b>	March 9	<b>30</b>	May 4	<b>35</b>	June 15
<b>3</b>	Sept 15	<b>12</b>	Nov 24	<b>19</b>	Jan 26	<b>25</b>	March 16	<b>31</b>	May 11	<b>36</b>	June 22
<b>4</b>	Sept 22	<b>13</b>	Dec 1	<b>20</b>	Feb 2	<b>26</b>	March 23	<b>32</b>	May 18	<b>37</b>	June 29
<b>5</b>	Sept 29	<b>14</b>	Dec 8	<b>21</b>	Feb 9	<b>27</b>	March 30		h/t	<b>38</b>	July 6
<b>6</b>	Oct 6	<b>15</b>	Dec 15		half term		Easter				end of term
<b>7</b>	Oct 13		Christmas								
<b>8</b>	Oct 20										
	half term										

Wk	Work to be covered		Learning activities to be carried out				Comment/ evaluation
	Subject content	Student activities	Teaching/learning method	Resources required	Assignment/ homework	Development skills	
0							
1	introduction to the course	give out books, information sheets about the course induction practicals and questions	q+a, class discussion practical work, class questions	pendulums, clocks etc	induction questions	application of number, practical skills	
2	electricity	introduction to electricity experiments to obtain $V-I$ graphs and Ohm's Law	demos, q+a, class discussion practical work, class questions	electrical apparatus	electricity questions sheets	application of number, incl. graphs, practical skills	
3	electricity (continued)	current, charge resistors in series and parallel experiments	demos, q+a, class discussion practical work, class questions	electrical apparatus	electricity questions sheets revision	application of number, practical skills	
4	electricity (continued)	resistivity, Kirchhoff's laws power and energy experiments test	demos, q+a, class discussion practical work, class questions	electrical apparatus	electricity questions sheets	application of number, practical skills	
5	electricity (continued)	EMF and internal resistance experiments	class discussion, practical work, class questions	electrical apparatus	electricity questions sheets	application of number, practical skills	
6	electricity (continued)	potential dividers LDRs and thermistors experimental work	demos, q+a, class discussion practical work, class questions	electrical apparatus	electricity questions sheets revise for test	application of number, practical skills	

Wk	Work to be covered		Learning activities to be carried out				Comment/ evaluation
	Subject content	Student activities	Teaching/learning method	Resources required	Assignment/ homework	Development skills	
7	electricity (continued)	alternating current and the use of the CRO and superconductors	demos, q+a, class discussion practical work, class questions	electrical apparatus	electricity questions sheets	application of number, practical skills	
8	particles and radiation	structure of the atom, radioactivity introduction and the strong nuclear force	demos, q+a, class discussion practical work, class questions	radioactivity apparatus	atomic structure questions sheets	application of number, practical skills	
<b>Half term</b>							
9	particles, antiparticles and photons	introduction to photoelectric effect and antiparticles	demos, q+a, class discussion practical work, class questions	internet, photoelectric effect apparatus	photoelectric effect questions	application of number and research skills	
10	electromagnetic radiation and quantum phenomena	photoelectric effect, ionisation, excitation and the electronvolt	demos, q+a, class discussion practical work, class questions	internet, photoelectric effect apparatus	photoelectric effect questions	application of number and research skills	
11	energy levels and photon emission	spectra of different light sources	demos, q+a, class discussion practical work, class questions	internet, diffraction gratings, gas lamps	energy level questions	application of number, practical and research skills	
12	wave-particle duality and introduction to particle classification	De Broglie wavelength	demos, q+a, class discussion class questions	diffraction tube and internet	De Broglie questions	application of number, practical and research skills	
13	particle interactions and classification of particles	introduction to quarks, baryons, hadrons etc, etc	class discussion, research work, class questions	internet	fundamental particles questions	communication and research skills	
14	quarks and antiquarks	introduction to quarks, baryons, hadrons etc, etc continued	class discussion, research work, class questions	internet	fundamental particles questions	communication and research skills	

Wk	Work to be covered		Learning activities to be carried out				Comment/ evaluation
	Subject content	Student activities	Teaching/learning method	Resources required	Assignment/ homework	Development skills	
15	revision for AS exam			past papers, tests	revision	revision techniques	
<b>Christmas</b>							
16	revision for AS exam			past papers, tests	revision	revision techniques	
17	scalars and vectors	experimental work on scalars and vectors test	demos, q+a, class discussion practical work, class questions	internet access, mechanics apparatus	mechanics questions sheets revision for test	application of number, practical skills	
18	moments	principle of moments experiments	demos, q+a, class discussion practical work, class questions	moments apparatus	moments questions sheets	application of number, practical skills	
19	motion in a straight line	experimental work with motion apparatus	demos, q+a, class discussion practical work, class questions	motion apparatus	mechanics questions sheets	application of number, practical skills	
20	projectile motion	experimental work with motion apparatus	demos, q+a, class discussion practical work, class questions	motion apparatus Internet	mechanics questions sheets	application of number, practical skills	
21	Newton's laws	experimental work with energy apparatus	demos, q+a, class discussion practical work, class questions	motion apparatus	mechanics questions sheets	application of number, practical skills	
<b>Half term</b>							

Wk	Work to be covered		Learning activities to be carried out				Comment/ evaluation
	Subject content	Student activities	Teaching/learning method	Resources required	Assignment/ homework	Development skills	
22	work, energy and power	experimental work with energy apparatus	demos, q+a, class discussion practical work, class questions	energy apparatus	mechanics questions sheets	application of number, practical skills	
23	bulk properties of solids	experimental work on density, strain energy and behaviour of materials	demos, q+a, class discussion practical work, class questions	Tensometer	materials questions sheets	application of number, practical skills	
24	stress, strain and the Young Modulus	experimental work on stress, strain and Young modulus	demos, q+a, class discussion practical work, class questions	Tensometer stretching wire equipment	materials questions sheets	application of number, practical skills	
25	waves (general)	introduction to waves – transverse and longitudinal $v = f \lambda$ and polarisation experimental work	demos, q+a, class discussion practical work, class questions	waves apparatus, internet	waves question sheets	application of number, practical skills	
26	light waves	reflection, refraction and polarisation experimental work	demos, q+a, class discussion practical work, class questions	light apparatus	refraction and reflection question sheets	application of number, practical skills	
27	superposition of waves and stationary waves	standing waves circus of experiments	demos, q+a, class discussion practical work, class questions	strings, oscillators	standing waves question sheets	application of number, practical skills	
<b>Easter</b>							

Wk	Work to be covered		Learning activities to be carried out				Comment/ evaluation
	Subject content	Student activities	Teaching/learning method	Resources required	Assignment/ homework	Development skills	
28	interference of waves	interference of waves experimental work	demos, q+a, class discussion practical work, class questions	slits, laser Internet access	interference question sheets	application of number, practical skills	
29	diffraction and diffraction gratings	diffraction of waves experimental work	demos, q+a, class discussion practical work, class questions	slits, gratings, laser internet access	diffraction question sheets	application of number, practical skills	
30	ISA week			Various			
31	revision for exams						
32	revision for exams						
<b>Half term</b>							
33							
34							
35							
36							
37							
38							