

Welcome to A-Level Physics!



Take a seat.



The Physics Department:

OCR Physics A2 Teacher Support CD



Mr Hutchins – Head of Physics

Mr Graves





Mr Venn

Mr Rich



Homework & Prep-time:

You will be expected to complete **4.5 hours** of homework/prep-time outside of lessons each week. This will include:

-Homework (Teacher A) (1 hr)

-Homework (Teacher B) (1 hr)

-Prep work (1.5 hrs)

-Isaac physics questions (1 hr)

Y12 Course Plan 23-24				Teacher A (4 hours)										Teacher B (5 hours)								
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Week Comm.	Wk No.	Sch Wk	Se	ection	Lesson Topic	Hwk (1h)	Ass.	IP (1h)	Prep. (1.5h)	ТВТ	Prac.	Se	ection	Lesson Topic	Hwk (1h)	Ass.	IP (1h)	Prep. (1.5h)	твт	Prac.		
04/09/23* *	1	A	2.	.1	Entrance test Recap/assessment lesson	Y	Ent. test	Y				4.	.1	Introduction/marking summer work Circuit components	Y			4.1.3				
11/09/23	2	В			Physical quantities and units Systematic errors and random errors	Y			2.1.5					Electric charge and current Electron drift velocity	Y	4.1 KH	Y					
18/09/23	3	А			Precision and accuracy Absolute and percentage uncertainties	Y		Y		2.1				Recap/assessment lesson Recap/assessment lesson	Y	4.1 KT		Rev				
25/09/23	4	В			Graphical treatment of uncertainties Scalar and vector quantities	Y			2.2.3			4.	2	Recap/assessment lesson P.d and e.m.f	Y		Y		4.1			
02/10/23	5	А			Scalar and vector calculations Resolving vectors	Y		Y		2.2				Resistance and Ohm's Law Resistance of circuit components	Y			4.2.4				
09/10/23	6	В			Recap/assessment lesson	Y	2 КН		Rev					Practical lesson Resistivity	Y		Y			PAG		
16/10/23	7	А	3	1	Recap/assessment lesson	Y	2 KT	Y						Practical lesson Effect of temperature on resistivity	Y			4.2.7	4.2	PAG 3.1		
				. 1	Deminions in kinemates				Half	f-Term				Ellect of temperature of resistivity	1	1	1	1		0.1		
30/10/23	8	В			Graphs of motion	Y			3.1.4					Electrical power	Y	4.2	Y					
06/11/22	0	^	Ŀ-		Constant acceleration equations	V		v				_		Cost of electrical energy	v	KH		Boy		-		
00/11/23	9	^			Measurement of g	T V		I	0.1.0		DA O	-		Recap/assessment lesson	1 V	4.2 KT	V	Rev				
13/11/23	10	в			Practical lesson Practical lesson	Y			3.1.6		PAG 1.1	4.	.3	Kecap/assessment lesson Kirchoff's first and second laws	Y		Y					
20/11/23	11	A			Car stopping distances Recap/assessment lesson	Y	3.1 KH	Y						Series circuits Parallel circuits	Y			4.3.4				
27/11/23	12	В			Recap/assessment lesson Recap/assessment lesson	Y	3.1 KT		Rev					The potential divider Practical lesson	Y		Y		4.3	PAG 4.1		
04/12/23	13	А	3.	.2	Force and the newton Dynamics	Y		Y						Practical lesson Internal resistance	Y			4.3.7		PAG 4.3		
11/12/23	14	В			Drag and terminal velocity Practical lesson	Y			3.2.5		PAG 12			Circuit analysis 1 Circuit analysis 2	Y	4.3 КН	Y					
18/12/23	15	A			Equilibrium Turning forces	Y		Y		3.1				Recap/assessment lesson	Y	4.3 KT		Rev				
	1				_ · •·····				Christm	as Holid	av					1						
08/01/24	16	В			Centre of mass	Y			3.2.8		Í	4	4	Recap/assessment lesson Wave motion	Y		Y					
15/01/24	17	A			Pressure Recap/assessment lesson	Y	3.2 КН	Y						Wave terminology Practical lesson	Y			4.4.3		PAG		
22/01/24	18	В			Recap/assessment lesson Recap/assessment lesson	Y	3.2 KT		Rev					Wave speed and equation Common properties of waves	Y		Y			0.0		
29/01/24	19	А	3.	.3	Work and the joule	Y		Y		3.2				Electromagnetic waves	Y			4.4.7				
30/01/24	20	В			Potential and kinetic energy Power and the watt	Y			3.3.5					Practical lesson Refraction of light	Y		Y			PAG		
05/02/24	21	А			Efficiency Recap/assessment lesson	Y	3.3 кн	Y						Total internal reflection	Y	4.4 кн		4.4.9		PAG 6.2		
12/02/24	22	в			Recap/assessment lesson	Y	3.3		Rev					Recap/assessment lesson	Y	NI I	Y			0.2		
	I				Recap/assessment lesson		KT	L		-				Interference								
26/02/24	23	A	3.	.4	Deformation of materials	Y		Y	Han	3.3				Young's double-slit experiment	Y		T	4.4.12		1		
04/03/24	24	В	H		Hooke's law Young's Modulus	Y			3.4.4		PAG			Diffraction gratings Practical lesson	Y		Y		4.4	PAG		
11/03/24	25	A	E		Practical lesson Practical lesson	Y	3.4	Y		3.4	2.1 PAG	-		Stationary waves Stationary wave experiments	Y			Rev		5.1		
18/03/24	26	В			Categorisation of materials Recap/assessment lesson	Y	KH 3.4		Rev		2.2	-		Stationary longitudinal waves Practical lesson	Y	4.4	Y			PAG		
25/03/24*	27	A	-		Recap/assessment lesson Recap/assessment lesson	Y	KT	Y				4.	.5	Recap/assessment lesson Recap/assessment lesson	Y	KT		4.5.2		5.2		
			3.	.5	Newton's laws of motion	L	L							The photon		L						
45/04/04	00		-		Management		-	1	Easter	Holiday				Desetion la serve		1		-		DAC.		
15/04/24*	28	в			Momentum Momentum, force and impulse	Y			3.5.4					Practical lesson The electronvolt	Y		Ý		4.5	PAG 6.1		
22/04/24	29	А			Elastic and inelastic collisions Recap/assessment lesson	Y	3.5 KH	Y		3.5				Photoelectric effect 1 Photoelectric effect 2	Y	4.5 KH		4.5.5				
29/04/24	30	В			Recap/assessment lesson Recap/assessment lesson	Y	3.5 KT		Rev					Wave-particle duality Recap/assessment lesson	Y	4.5 KT	Y					



<u>Exam</u> board/syllabus:

OCR Physics A (H556)



Content is split into six teaching modules:

- Module 1 Development of practical skills in physics
- Module 2 Foundations of physics
- Module 3 Forces and motion
 - Module 4 Electrons, waves and photons

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- Module 5 Newtonian world and astrophysics
- Module 6 Particles and medical physics

Component 01 assesses content from modules 1, 2, 3 and 5.

Component 02 assesses content from modules 1, 2, 4 and 6.

Component 03 assesses content from all modules (1 to 6).

Modelling physics (01) 100 marks 2 hours 15 minutes written paper	37% of total A level
Exploring physics (02) 100 marks 2 hours 15 minutes written paper	37% of total A level
Unified physics (03) 70 marks 1 hour 30 minutes written paper	26% of total A level
Practical endorsement in physics (04)* (non exam assessment)	Reported separately (see Section 5h)



Monitoring:

You will all be given an ALPS target grade at the start of the year.

We will expect you to be consistently achieving *no less than* one grade below your target grade on Key Homeworks and Key Tests.

Additional support will be provided to students who fall below this standard (PASS).

PHYSICISTS!





Trips:

Y12 CERN (April of Y12)

Y13 CERN (March of Y13)

Physics at Work (every September)

Cambridge Physics Lectures (6 per year)

Guest lecturers





We will expect you to get yourself a copy of the course textbook.

Amazon: £29.60 new or from £9.16 second hand



Things to bring to every Physics lesson!

Textbook

Scientific Calculator

Your Folder

Ruler & Protractor

Good Physics students.....

-come and ask for help when they are stuck

- -ask their teachers to explain something in a different way -complete their work on time
- -work hardest on the things they find hard
- -are proactive not reactive
- -TAKE RESPONSIBILITY FOR THEIR LEARNING

Bad Physics students.....

- -Leave things unfinished if they can't do it
- -Ignore problems and don't ask for help
- -Miss deadlines and have poor quality work
- -Don't do any self-study
- -DON'T TAKE RESPONSIBILITY FOR THEIR LEARNING



Questions?



Please take a copy of the summer work.

Complete it over the holidays and hand it in to your physics teacher in your **first** physics lesson in September.

It contains some mathematical tasks designed to test your competence in some of the basic skills you will need for the physics course. **Experiment:**

You are going to use a simple pendulum to measure the gravitational field strength of the Earth.

Method:

- 1. Set up your pendulum as shown in the diagram.
- Time the pendulum for 10 swings, for a length of 2. your choice.
- Repeat for at least 5 more lengths. 3.



T = period of the pendulum (s)

L = length of the pendulum (m) g = gravitational field strength (N/kg)

Analysis:

- Calculate the period (T) (time for **one** swing) for each length. 1.
- Calculate the period² (T^2) for each length. 2.
- Plot a graph of T² (y-axis) against L (x-axis). Draw a straight line of best fit. 3.
- Calculate the gradient of your graph. 4.
- To calculate the Earth's gravitational field strength, divide $4\pi^2$ by your 5. gradient. ($g = 4\pi^2$ /gradient)
- The Earth's gravitational field is 9.81 N/kg. How far away was your answer, 6. as a percentage of the accepted value?