



Longley Park

SIXTH FORM ACADEMY

Creating Excellence Together,
through a culture of care

*Get Ready
For...*



What will I study?

- Modern physics; particle physics and quantum physics
- Mechanics; Newtonian mechanics, circular motion, simple harmonic motion
- Materials
- Waves
- Fields; gravitational fields, electric fields, magnetic fields
- Electricity and capacitors
- Nuclear physics
- Astrophysics

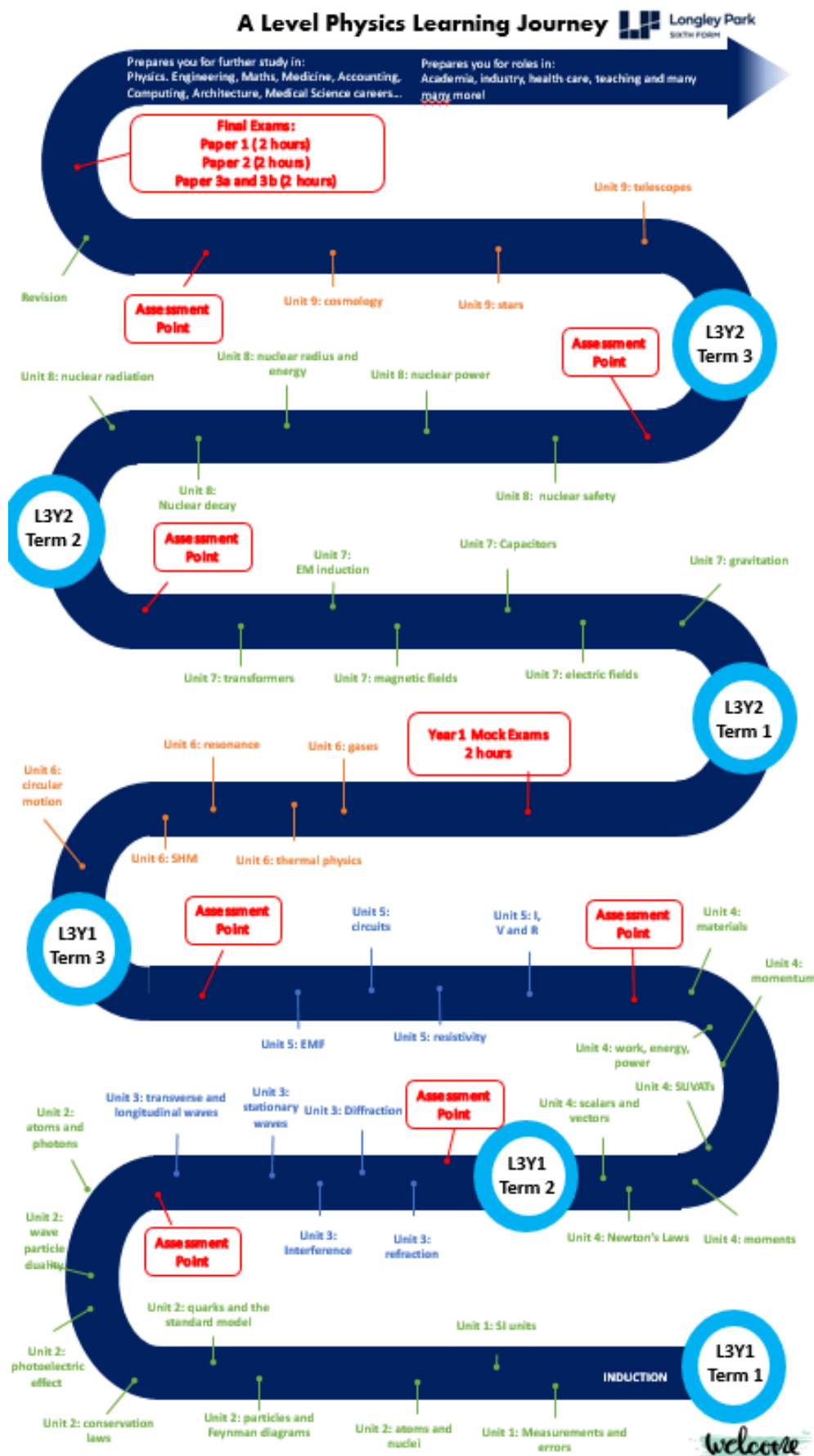
What can I do next?

- Degrees in physics, maths, medicine, chemistry, biomedical science, or any other area of science
- Degrees in engineering, finance, accounting, law or any other technical field
- Apprenticeships in a wide range of jobs
- Many other options; physics gives you a very in demand qualification with a wide range of skills that can be applied to anything. You will not struggle to find a job!

What additional opportunities will I have on my course?

- Trips to a range of universities including Sheffield Hallam University and the University of Manchester
- Engagement with a range of employers
- The opportunity to take part in a range of trips, including to the Large Hadron Collider in Switzerland
- Trip to Yorkshire Wildlife Park

Your Learning Journey



Summer transition work:

Before we get to the practice work, you MUST learn the following information off by heart. Think of this as the physics alphabet – knowing this information well will help you achieve the best grade possible. You will be tested on this information regularly.

Quantity	Quantity	SI Unit	Unit Symbol
Length	L or l	Metre	m
Distance	s	Metre	m
Height	h	Metre	m
Thickness (of a Wire)	d	Metre	m
Wavelength	λ	Metre	m
Mass	m or M	kilogram	kg
Time	t	second	s
Period	T	second	s
Temperature	T	Kelvin	K
Current	I	Ampere	A
Potential Difference	V	Volt	V
Area	A	Metres squared	m ²
Volume	V	Metres cubed	m ³
Density	ρ	Kilograms per metre cubed	kg m ⁻³
Force	F	Newton	N
Initial Velocity	u	Metres per second	ms ⁻¹
Final Velocity	v	Metres per second	ms ⁻¹
Energy	E	Joule	J
Kinetic Energy	E _k	Joule	J
Work Done	W	Joule	J
Power	P	Watt	W
Frequency	f	Hertz	Hz
Charge	Q	Coulomb	C
Resistance	R	Ohm	Ω
Resistivity	ρ	Ohm Metre	Ωm
Momentum	p	kilogram metres per second	kg ms ⁻¹
Gravitational Field Strength	g	Newtons per kilogram	N kg ⁻¹

You must also memorise the following GCSE equations. It is assumed that an A Level student knows all the GCSE content, and so you will be expected to use these to solve questions without being reminded about them.

Eqn	Word Equation	Symbol Equation
1	weight = mass $\times$ gravitational field strength	$W = m \times g$
2	work done = force $\times$ distance (along the line of action of the force)	$W = F \times s$
3	force applied to a spring = spring constant $\times$ extension	$F = k \times e$
4	moment of a force = force $\times$ distance (normal to direction of force)	$M = F \times d$
5	pressure = $\frac{\text{force normal to a surface}}{\text{area of that surface}}$	$p = \frac{F}{A}$
6	distance travelled = speed $\times$ time	$s = v \times t$
7	acceleration = $\frac{\text{change in velocity}}{\text{time taken}}$	$a = \frac{\Delta v}{t}$ or $a = \frac{(v - u)}{t}$
8	resultant force = mass $\times$ acceleration	$F = m \times a$
9 HT	momentum = mass $\times$ velocity	$p = m \times v$
10	kinetic energy = $0.5 \times \text{mass} \times (\text{velocity})^2$	$E_k = \frac{1}{2} \times m \times v^2$
11	gravitational potential energy = mass $\times$ gravitational field strength $\times$ height	$E_p = m \times g \times h$
12	power = $\frac{\text{energy transferred}}{\text{time}}$	$P = \frac{E}{t}$
13	power = $\frac{\text{work done}}{\text{time}}$	$P = \frac{W}{t}$
14	efficiency = $\frac{\text{useful output energy transfer}}{\text{total input energy transfer}}$	
15	efficiency = $\frac{\text{useful power output}}{\text{total power input}}$	
16	wave speed = frequency $\times$ wavelength	$v = f \times \lambda$
17	charge flow = current $\times$ time	$Q = I \times t$
18	potential difference = current $\times$ resistance	$V = I \times R$
19	power = potential difference $\times$ current	$P = V \times I$
20	power = (current) ² $\times$ resistance	$P = I^2 \times R$
21	energy transferred = power $\times$ time	$E = P \times t$
22	energy transferred = charge flow $\times$ potential difference	$E = Q \times V$
23	density = $\frac{\text{mass}}{\text{volume}}$	$\rho = \frac{m}{v}$

Re-arranging equations correctly is a vital skill for A Level Physics. Practice by solving these:

Equation	Solve for:	Working out and answer
$V = IR$	R	
$I = \frac{Q}{t}$	t	
$\rho = \frac{RA}{l}$	A	
$\mathcal{E} = V + Ir$	r	
$s = \frac{(u + v)}{2}t$	u	

Equation	Solve for:	Working out and answer
$E = \frac{1}{2}Fe$	F	
$v^2 = u^2 + 2as$	u	
$T = 2\pi\sqrt{\frac{m}{k}}$	m	

Finally:

Search for “Google Classroom”, create a log in and enter the following class code to join our class. Here you will find some important work to complete over the summer break. Make sure you complete this as it will prepare you for your A Level studies!

Code: 2c7etkp

How can I go the extra mile to prepare for my course?

Additional Reading/ Useful Websites:

- Existential Physics (Sabine Hossenfelder)
- In Search of Schrodinger's Cat (John Gribbin)
- The Elegant Universe (Brian Greene)
- The Order of Time (Jim al-Khalili)

What else can I do to prepare for starting Sixth Form? What our students say

"Get ready emotionally, it is different from school!"

"Be confident. Put yourself out of your comfort zone and meet new people; you will meet lots of new people when you get here"

"Start looking at Universities/ Careers now! It will give you a focus when you start at Sixth Form"

"You will need to be more independent and be able to manage your time differently to school. Start building those skills now!"



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Additional Opportunities

We offer a variety of different opportunities to enrich your time with us and support your next steps:

- ~A variety of Clubs and Societies through Project You
- ~Employer immersion visits & Trips to employers
- ~Work Experience & Placement
- ~Trips to Universities
- ~Guest Speakers
- ~Leadership through the Student Ambassador Programme
- ~ Independent Learning Centre with IT, books and journals, quiet and group study + Seminar Rooms
- ~Health and Fitness Activities in our onsite gym
- ~Duke of Edinburgh
- ~Career Ready internship Programme
- ~ Access to wellbeing, academic tutorial, and careers support