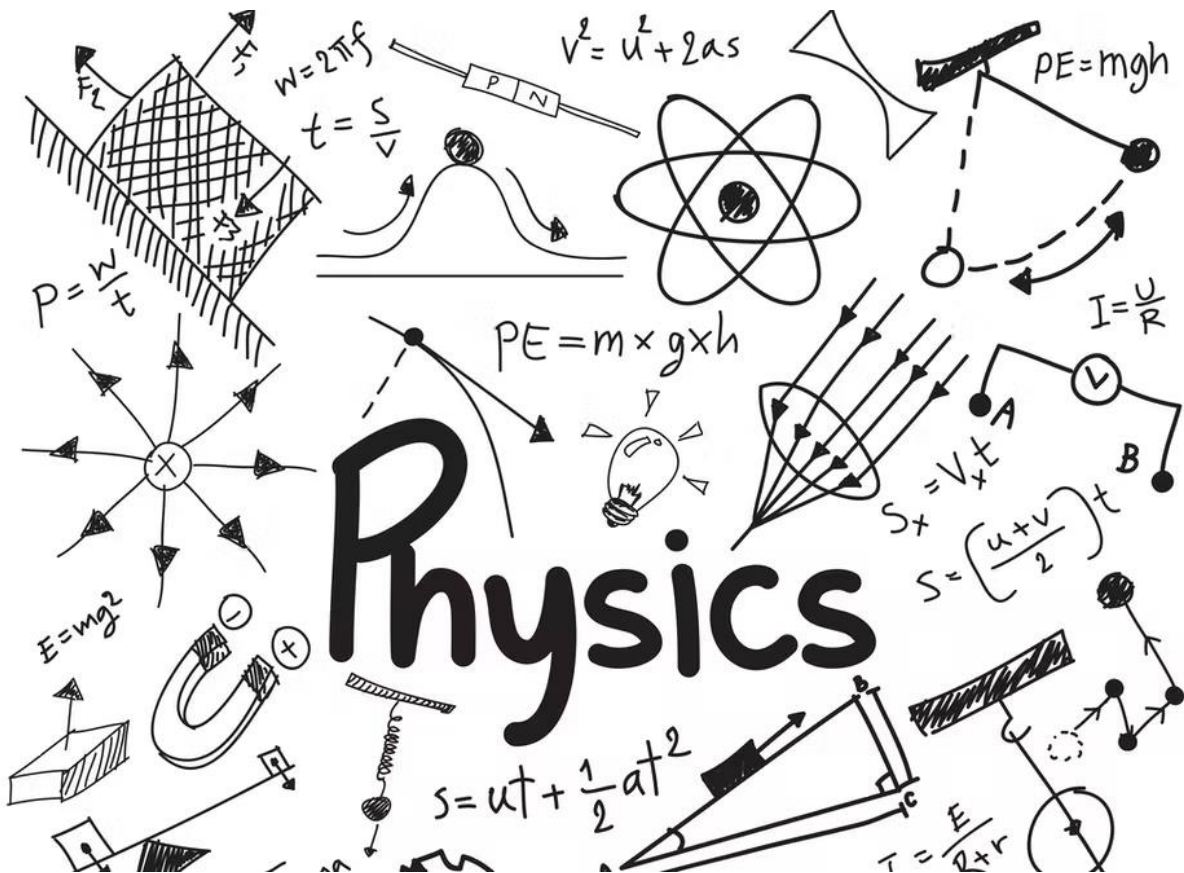


NSB Physics

Transition Booklet



Welcome to A Level Physics

A Level Physics will give you the opportunity to explore the fundamental concepts that underpin the way the world and Universe around us works. At NSB we follow the Salters Horners approach to teaching, this means that all the Physics is in context allowing you to see the wider applications of the concepts you are taught. It will also give you an insight into where studying Physics can take you in the future.

What course will you study?

You will be studying the Edexcel A Level Physics course.

What topics will I study?

During Year 12 you will study:

Higher Faster Stronger – Mechanics

Good Enough to Eat – Fluid dynamics and optics

Sound of Music – Waves and quantum effects

Technology in Space – Electricity and quantum effects

Digging up the Past – Electricity and wave-particle duality

Spare parts surgery – Waves and optics

During year 13 you will study:

Reach for the Stars – Astrophysics, nuclear physics, thermodynamics and cosmology

Transport on Track – Mechanics, electromagnetism and capacitors

Probing the heart of matter – Mechanics and particle physics

Build or bust – Oscillations and thermal physics

The Medium of the Message – Synoptic (covers many areas of physics)

How will you be assessed?

You will be assessed through a combination of key home learning tasks, termly assessments and trial exams

The three written public examinations will all take place at the end of **Year 13**. Two papers cover specified content and one is based on synoptic questions and experimental techniques.

Resources you will be given in September

Textbook: Salters Horner AS/A Level Physics Student Book 1

Lab Book

Resources that may be useful

Revision Guide: Pearson Revise Edexcel AS/A level Physics

Maths Skills: A Level Physics Essential Maths Skills (CGP)

Introduction to A Level Physics videos:

<https://www.youtube.com/watch?v=ayjtBJ0UcqE&list=PLIDtVvefFYT9JAZspswsLLYFARdOzk12&index=2>

Summer Home Learning

- Learn the definitions on the attached sheet.
- Watch and make notes on the three linked videos:
 - Equation of motion: <https://www.youtube.com/watch?v=ZzDYfGFODGY>
 - Deriving the equations of motion: <https://www.youtube.com/watch?v=rCi3exlvdo0>
 - Equation of motion questions: <https://www.youtube.com/watch?v=O-PvBh15ILc>
- Sign up for Isaac Physics using this link which will automatically connect you to the transition group: <https://isaacphysics.org/account?authToken=KEBUW4>
- On Isaac Physics go to My Isaac, My Assignments. You should see three assignments, one on rearranging equations, one on standard form and prefixes and one on accelerated motion in 1d.
Warning: Isaac Physics is very picky about the number of significant figures you use, read the significant figures guide on this if you are having any issues.
https://isaacphysics.org/solving_problems?stage=a_level#acc_solving_problems_sig_figs

Higher, Faster, Stronger Definitions Sheet

Section	Term	Definition
1.2	Acceleration	The rate of change of velocity (ms^{-2})
1.2	Displacement	Distance in a specified direction (m)
1.2	Free fall	When an object accelerates with the acceleration due to gravity
1.2	Scalar	A quantity with magnitude only
1.2	Vector Quantity	A quantity with both magnitude and direction
1.2	Velocity	Speed in a specified direction (ms^{-1})
1.3	Tangent	Straight line touching a curve
1.4	Newton's first law of motion	An object will move at a constant velocity or stays at rest unless an unbalanced (resultant) force acts on it
1.4	Newton's second law of motion	The rate of change of momentum of a body is proportional to the RESULTANT force acting on it and occurs in the direction of the force.
1.4	Newton's third law of motion	All forces come in pair, these forces act on different bodies, are equal in size, opposite in direction and are of the same time
1.4	Weight	The gravitational force acting on a body (N)
1.4	Resultant Vector	The net effect of two or more vectors in a given direction
2.1	Equilibrium	No net force
2.1	Coplanar	Acting in the same plane
2.1	Resultant vector	A single vector which replaces two or more separate ones
2.2	Elastic	Will return to original dimensions on removal of the deforming stress/force
2.2	Hooke's Law	Tension proportional to extension or stress proportional to strain
2.2	Limit of proportionality	Past this point a material will no longer obey Hooke's law
2.2	Stiffness	A measure of how much extension takes place for a particular force
3.1	Work	Energy transferred, equal to the product of force and displacement in the direction of the force
3.1	Kinetic energy	The energy a body has because of its movement (J)
3.1	Law of Energy Conservation	Energy cannot be created or destroyed
3.1	Potential energy	The energy a body has because of its position or the arrangement of its parts
4.1	Elastic potential energy	Energy an object has due to being compressed or stretched