

Year 12 Transition

Welcome to Nailsea Sixth Form



KS5 Subject: **Physics**

Objectives for Transition Tasks:

- To start to develop expected 6th form study skills, including independence
- To culture an interest and passion for your chosen subject through enquiry
- To learn core concepts of the subject to use in your studies

Watch:

'Atom' – by Jim Al-Khalili. The history of our relationship with the atom and atomic energy.

E1 – 'Clash of the Titans'

<https://www.youtube.com/watch?v=GOJFznzSZhM>

E2 – 'Key to the Cosmos'

<https://www.youtube.com/watch?v=CYQwrAhT7HA>

E3 – 'The Illusion of Reality'

<https://www.youtube.com/watch?v=KFS4oiVDeBI>

'Secrets of Size: Atoms to Supergalaxies' -

<https://www.bbc.co.uk/iplayer/episode/m0017frm/secrets-of-size-atoms-to-supergalaxies-series-1-1-going-small>

'Neutrino – Hunting the Ghost Particle' -

<https://www.bbc.co.uk/iplayer/episode/m000zwqr/neutrino-hunting-the-ghost-particle>



Read & Listen:

Book recommendations:

- The Elegant Universe – Brian Greene
- Reality is not what it seems – Carlo Rovelli
- The Order of Time – Carlo Rovelli
- Six Easy Pieces – Richard Feynman
- Why does $E=mc^2$ – Brian Cox and Jeff Forshaw
- Consciousness Explained – Daniel C. Dennett
- Guns, Germs and Steel – Jared Diamond



Independent Task (to be submitted):

- **Prepare** an A4 ring binder, with paper (both graphical and lined) and plastic wallets
- **Buy** the Year 1 Textbook - <https://www.amazon.co.uk/Level-Physics-AQA-Student-Online/dp/1782943234>
- **Buy** the CGP Head Start book - <https://www.amazon.co.uk/Head-Start-level-Physics-Level/dp/1782942815>
- **Work through the tasks** in the booklet. Each section covers important core mathematical skills which will be essential from the beginning of our course



The Infinite Monkey Cage -

<https://www.bbc.co.uk/sounds/brand/b00snr0w> -

science/comedy panel show on Radio 4 which invites leading experts to discuss the major ideas of their field in a fun and accessible way. Recent episodes have include the fantastic Carlo Rovelli discussing Quantum Gravity.

More or Less - <https://www.bbc.co.uk/sounds/brand/p00msxf1> -

one for those keen on numbers and statistics. Takes figures and stats from recent headlines and analyses them in an attempt to determine how truthful or misleading they are.

How They Made Us Doubt Everything -

<https://www.bbc.co.uk/sounds/series/m000l7q1> - a recent series

detailing the often catastrophic links between valid scientific evidence, the media, and political lobbyists. It tells very relevant stories about how science works and the importance of trust in experts.

Talk Nerdy - <https://www.carasantamaria.com/podcast/> - award winning female-fronted podcast featuring conversations with interesting people of interesting topics. Particularly good for those with an interest in space-time and quantum.



Aim Higher Task:

In Spring 2023 we hope to take a trip to CERN in Geneva, Switzerland to visit the Large Hadron Collider. The LHC has recently started up following a period of upgrades, and physicists are hopeful to make discoveries which will confirm (or possibly contradict) the 'Standard Model'.

Watch:

https://www.youtube.com/watch?v=1DongE_2rzM&ab_channel=Reuters

Read:

<https://home.cern/science/physics/standard-model>

Research:

Design a poster on the 'Standard Model'. The poster should introduce the model to non-scientists and new learners. It should include the major particle families, the 4 fundamental forces and their carrier particles, and information about 'annihilation and pair production'.



DEADLINE FOR TRANSITION TASK: Please bring to your first lesson in September.