OLDHAM HULME GRAMMAR SCHOOL

Nurturing Potential since 1611

PHYSICS

Why Study Physics?

- Physics is often in the headlines and on television. You will have seen the exciting discovery of the Higgs Boson at CERN, the celebrated landing of the Rosetta spacecraft on a comet. Television shows such as Big Bang Theory and Brain Cox's latest series 'Human Universe' all highlight the importance of Physics, the amazing discoveries made by Physics and the fun of finding out about the universe.
- Physics provides such a broad training that whatever career you have in mind, physics will stand you in good stead. All employers value the skills that physics develops: an ability to grasp things quickly, a determination to find coherent answers, along with problem-solving, analytical, mathematical and IT skills. Studying physics is an excellent way of keeping your options open, as shown in the variety of careers below.

Subject Content and Course assessment.

We will be studying the AQA Physics Specification.

AS	Full A-level units
Measurements and their errors	Further mechanics and thermal physics
Particles and radiation	Fields and their consequences
Waves	Nuclear Physics
Mechanics and materials	Optional Unit

Optional Unit Choices:

Astrophysics	Medical Physics	Engineering Physics	Turning Points in Physics	Electronics

Skills and Requirements

- If you have an enquiring mind and an urge to find out about and understand the world around you then Physics is the subject for you.
- You need to have obtained a Grade B or above in GCSE Physics.
- You need to have performed well in Mathematics at GCSE and a study of Mathematics at AS level would be advantageous, but by no means essential.

Career Opportunities

Medicine:

- Whether you want to be a nurse, a surgeon or medical physicist - understanding physics is important if you want to work in modern medicine. Physics has revolutionised the diagnosis and treatment of illness. Surgery is now routinely carried out using lasers, cancer is treated using radiation and the inside of our bodies are imaged using X-rays, ultrasound, NMR and PET scans. New techniques, such as using nanobots to target individual cancer cells or using infrared light to monitor our blood, are continuously being developed.

Law and Finance:

- In finance, it is a physicist's ability to model complex systems that is particularly valued; billions of pounds rest on predicting the future behaviour of global markets. A physics education is also important to law - forensics requires a detailed understanding of how objects move and the forces

involved when analyzing the scene of a crime or accident. Patent lawyers on the other hand need to understand new technology in order to effectively protect new inventions.

Space:

- The UK is second only to the USA in space science and, although only a lucky few get the chance to become an Astronaut, studying physics can certainly help land you a job in the space industry..
- You could become a cosmologist and investigate the evolution of the universe; a planet hunter who searches for habitable planets around other stars; an astrophysicist who searches for dark matter and black holes, or an engineer that designs satellites or robots that land on other planets.

Music and Television

- From the sound engineer who controls the mix at a music concert to the special effects technician working on the latest action movie, many of the people that work in the media industry need physics know-how.

Cutting Edge

- Physicists that work at the cutting edge are often driven by curiosity. They strive to answer questions like 'How big is the universe?' or 'What is everything made of?'
- Although their work doesn't always have an obvious application to everyday life, by pushing technology to the limits they are responsible for lots of useful spin-offs, from new ways of sterilising food using particle accelerators to the invention of the World Wide Web.

Environment

- Physics is vital to understanding everything from the Earth's core to the very top of the atmosphere. Whether you want to be a storm chaser, investigate volcanoes for a living, develop new renewable energy technology, study how climate change is affecting the penguin populations or keep tabs on the size of the Sahara Desert - studying physics is the route to huge range of exciting careers in environmental science.

Buildings & Structures

- After taking physics at A-level you can then train to become an Architect or a Civil Engineer. Architects design all sorts of buildings, everything from schools to skyscrapers. Civil engineers build the other structures that are vital for modern society - such as bridges, dams and tunnels.

Transport

- Whether you want to design jet fighters, electric sports cars or superconductor maglev trains, physics will keep you moving in the right direction. Commercial spaceflight is just beginning and we also need to more environmentally friendly ways of getting around - the future of transport is full of exciting challenges for you to be involved in.

Sports and Games

- Physics is behind so much of the technology in sports and games. Everyone from the designer trying to build a better bike for the Tour-de France or Olympics to the games programmer trying to build a more realistic computer games needs physics.

Energy

- Concerns about climate change along with the decreasing supply of fossil fuels means there is a growing need to reduce global energy consumption and develop new ways of generating electricity.
- People with a physics background will play a vital role in everything from making existing technology more energy efficient to developing new technology such as nuclear fusion reactors.