THE LAMMAS SCHOOL

Inspiring the scientists of tomorrow to recognise that as Rosalind Franklin said: “Science and everyday life cannot and should not be separated”. Science has changed our lives and is vital to the world’s future prosperity, and we believe that all our pupils should be taught essential aspects of the knowledge, methods, processes and uses of science.

We aim to develop our students by building upon key foundational knowledge and concepts, encouraging them to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena, enabling them to develop into scientifically literate individuals. This will be done by making sense of the world that we live in through investigation as well as using and applying processing skills and exposing the students to high-quality teaching and learning experiences. Building on our student’s natural curiosity and developing a scientific approach to problems. To ensure that our students are prepared for life in an increasingly scientific and technological world today and in the future.

TLS Physics Curriculum

THE LAMMAS SCHOOL

Engineering, Aviation, Applied Science
Astronomer, Meteorologist, Metallurgist
Computer game coding
A levels: Physics
University

Year 11

Examination preparations
Key scientific facts across Physics. Scientific facts and theories in a range of contexts. Experimental procedures in a range of contexts.
Electromagnetic radiation and the application of this. Magnetic fields and the calculation of magnetic force. The motor effect and Fleming's left hand rule.

Waves and Electromagnetism
Properties of waves and the difference between transverse and longitudinal waves . Wave calculations of velocity, frequency and wavelength. Experimental methods to determine the velocity and the frequency of a wave using a ripple tank. Reflection refraction and diffraction. Triple Physics includes the study of space, black body radiation, lenses and the change of momentum.

Hooke's law required practical
Calculation of energy in a spring and spring constant. Definition and calculation of velocity, acceleration and deceleration. Work done calculations.
Variables in experimental methods and represent results using a range of graphs. Describe motion-time graphs . Select formulas to calculate forces and motion variables from experimental data. Newtons first, second and third laws. Stopping, thinking and braking distance.

Year 10

Conservation of Energy
Energy stores and changes. Evaluate energy resources. Variables in a range of physics contexts. Practicals based on specific heat capacity and radiation from a range of different surfaces. Graphs to represent collected data. Power rating of appliances.
Calculations of useful and wasted energy transfers. Reducing heat loss from homes and efficiency calculations. Calculations of gravitational, elastic and potential energy. Renewable and non renewable energy sources.

Electrical Circuits
Calculations of current, resistance, potential difference and power in different circuits. Comparison of components in series and parallel circuits. Ohm's law and interpreting current voltage characteristics for different components. Using components as sensors in circuits. Mains electricity, AC and DC.

Atoms
The structure of an atom to explore radioactivity and changes in the nucleus. Half life calculations. Decay equations. Uses of radiation. Contamination and irradiation. Use of medical tracers.
The particle model of matter. Changes of state. Internal energy of a system.

Required Practicals
Design an investigation which includes background research on the related topic, identifying variables and analysing data and concluding results.
Students will build fundamental practical skills which will help them to think like a [illegible]tist.
Students will be given the opportunity to extend their learning on off site trips within or outside of the local community.

Energy Project
Investigate the impact of renewable and non-renewable energy resources in real life scenarios. This can include everyday applications such as calculating fuel cost, household bills, purchasing appliances based on energy rating.
Debating big global energy issues such as environmental impact and climate change and long lasting impact on future generations.

Year 9

Waves
- Understand the electromagnetic spectrum
- Model and Identify the different parts of the wave

Forces
- Understanding Hooke's law
- Calculating moments
- Using pressure equation to calculate pressure, force and area of gases and liquids

Energy
- Calculate word done, force and distance moved using and equation
- Explain the difference between conduction, convection and radiation

Year 8

Electromagnets
- Practical investigating how electromagnets work and how to change its strength
- Explain the difference between electromagnet and permanent magnet

Waves
- Structure of waves
- Transverse and longitudinal waves
- Sound and ears
- Light and the solar system
- Light and the eyes

Energy
- Renewable and non renewable energy
- Energy and food
- Calculating power
- Calculating the cost of using appliances

Electricity
- Practical – making circuits
- Learning about current and potential difference (voltage)
- Static electricity
- Structure of the atom

Year 7

Becoming a scientist and Physics
- Lab safety
- Introduction to practical skills
- Practical involving newton meters
- Reading an interpreting graphs
- Introduction to forces
- Speed graphs and calculations

Wisdom | Courage | Leadership