

Physics

Curriculum Intent: Our aim is to spark and cultivate our students' inherent curiosity and enthusiasm for investigating the natural world. We endeavour to establish an atmosphere in which every student feels empowered to become a self-assured scientist, well-versed in the methods of scientific enquiry. By adopting an interdisciplinary perspective, we encourage pupils to acknowledge the interconnectedness of diverse scientific disciplines and value the overarching concepts that facilitate our understanding of the world. We are committed to delivering a comprehensive, high-quality science education that motivates and inspires all learners to reach their utmost potential.

Year 12

Core knowledge:

Physical quantities and units, making measurements and analysing data, nature of quantities. Motion, forces in action, work, energy and power, materials. Newton's laws of motion and momentum. Charge and current, energy, power and resistance, electrical circuits, waves, quantum physics.

Procedural knowledge (how to...):

- Use scientific theories and explanations to develop hypothesis.
- Evaluate methods and suggest possible improvements.
- Apply a knowledge of sampling techniques to ensure any samples collected are representative.
- Apply a knowledge of a range of techniques, apparatus, and materials to select those appropriate for both field work and for experiments.
- Translate data from one form to another.
- Represent distributions of results and make estimates of uncertainty.
- Carry out and represent mathematical and statistical analysis.
- Explain everyday technological applications of science.
- Use a variety of concepts and models to develop scientific explanations.
- Appreciate the power of limitations of science and consider ethical issues.

Assessment:

Unit tests x10. TSAT exam/mock x2.

Homework:

Weekly: Worksheets, Past Papers, Isaac Physics(online)
Revision for tests x12. Practical Research Task (Term 3)

Links to careers and personal development include:

By gaining a deep understanding of the topics taught, students can explore various career paths such as academia, research, and industry-specific roles. The subject's interdisciplinary nature also helps develop essential skills like critical thinking, problem-solving, and effective communication, which are valuable in both personal and professional settings. Physics offers a strong foundation for future success and growth.

Year 13

Core knowledge:

Physical quantities and units, making measurements and analysing data, nature of quantities. Thermal physics, circular motion, oscillations, gravitational fields, astrophysics and cosmology. Capacitors, electric fields, electromagnetism, nuclear and particle physics, medical imaging.

Procedural knowledge (how to...):

- Use scientific theories and explanations to develop hypothesis.
- Evaluate methods and suggest possible improvements.
- Apply a knowledge of sampling techniques to ensure any samples collected are representative.
- Apply a knowledge of a range of techniques, apparatus, and materials to select those appropriate for both field work and for experiments.
- Translate data from one form to another.
- Represent distributions of results and make estimates of uncertainty.
- Carry out and represent mathematical and statistical analysis.
- Explain everyday technological applications of science.
- Use a variety of concepts and models to develop scientific explanations.
- Appreciate the power of limitations of science and consider ethical issues.

Assessment:

Unit test x9. TSAT exam/mock x2.

Homework:

Weekly: Worksheets, Past Papers, Isaac Physics(online)
Revision for tests x11

Links to careers and personal development include:

By gaining a deep understanding of the topics taught, students can explore various career paths such as academia, research, and industry-specific roles. The subject's interdisciplinary nature also helps develop essential skills like critical thinking, problem-solving, and effective communication, which are valuable in both personal and professional settings. Physics offers a strong foundation for future success and growth.