Physics

Physics forms the basis of most modern technologies and is the key to future global well-being

Content

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| Physics is the study of the laws that govern the physical world. It tries to understand the nature of basic things such as motion, forces, energy, matter, heat, sound and light. These are found throughout the universe, and so physicists study a wide range of topics. You might find a physicist smashing atomic particles together to find out how the universe began or you might find a physicist orbiting the Earth as an astronaut. Physicists also work in hospitals, designing new instruments or scanning techniques. Some physicists even create smaller and faster electronics for the next generation of computers. |

Special Features

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| The AS course and first year of the A level course include the study of Measurements and their errors, Waves, Materials, Mechanics (Forces and Motion), Electricity and the very interesting Particle Physics and Electromagnetic Radiation and Quantum Phenomena.  These lead on from the GCSE science course, build on the student’s knowledge and develop skills needed for university study.  The second year of the A level course naturally includes topics including Periodic Motion, Thermal Physics, Nuclear Physics, Electric, Magnetic and Gravitational Fields and Capacitance as well as the choice of studying Medical Physics or Astrophysics.  Practical skills are developed throughout the course through practical activities and assessed in AS and A level written papers. A level students will be awarded a separate pass/fail practical grade. |

Entry

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| Students should also be studying A Level Mathematics. Please refer to the John of Gaunt Sixth Form entry requirements. |

Attendance

One year to AS, plus one further year to complete A2 to full A Level.

Assessment

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| MODULE | LEVEL | MODULE TITLE | MODE OF ASSESSMENT | BRIEF OUTLINE OF MODULE |
| 1 | AS | Study of Measurement and their errors, Waves, Materials, Mechanics, Electricity, Particle Physics and Electromagnetic Radiation and Quantum Phenomena | AS 50%  1hour 30 minutes written examination paper.  Short and long answer questions | Particle physics introduces students to the fundamental properties and nature of matter, radiation and quantum phenomena.  In contrast, the study of electricity in this module builds on and develops GCSE studies and provides opportunities for practical work, looking into important applications. Vectors are studied and we develop an understanding of forces and energy.  Materials are studied in terms of their bulk properties and tensile strength. We develop knowledge and understanding of wave characteristics and properties and their applications including refraction, diffraction, superposition and interference |
| 2 | AS | Study of Measurement and their errors, Waves, Materials, Mechanics, Electricity, Particle Physics and Electromagnetic Radiation and Quantum Phenomena | AS 50%  1hour 30 minutes written examination paper.  Short and long answer questions on practical skills and data analysis  Multiple choice questions | Particle physics introduces students to the fundamental properties and nature of matter, radiation and quantum phenomena.  In contrast, the study of electricity in this module builds on and develops GCSE studies and provides opportunities for practical work, looking into important applications. Vectors are studied and we develop an understanding of forces and energy.  Materials are studied in terms of their bulk properties and tensile strength. We develop knowledge and understanding of wave characteristics and properties and their applications including refraction, diffraction, superposition and interference |

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| 3 | A2 | AS topics and Periodic Motion | A2 34%  2 hour written examination paper.  Short and long answer questions  Multiple choice | This unit builds on the ideas and knowledge from AS. |
| 4 | A2 | Thermal Physics, Fields and their consequence, Nuclear Physics | A2 34%  Short and long answer questions  Multiple choice | Nuclear Physics looks at the characteristics of the nucleus, the properties of unstable nuclei and how energy is obtained from the nucleus. Thermal Physics studies the thermal properties of materials and gases.. |
| 4 | A2 | Practical Skills  and data analysis and an **optional topic** (Astrophysics or Medical Physics) | A2 32%  Short and long answer questions  On practical experiments and data analysis and the option topic. |  |

Moving on

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| The applications, like career opportunities, are infinite. Employers today seek out people who can prove their ability to think logically, understand complex ideas and apply them to the real world. Whether you want to pursue a career in Science, the Media, Education, Business or a host of other fields, Physics can give you the edge. |