PRINCE WILLIAM SCHOOL

Physics

Overview:
Our A Level in Physics course enables students to build on their knowledge of the laws of physics, applying their understanding to solve problems on topics ranging from subatomic particles to the entire universe. They also have the opportunity to develop all the relevant practical skills.

Year 1:

1) Foundation of Physics
2) Forces and motion
   a) Motion
   b) Forces in Action
   c) Work Energy and Power
   d) Materials
   e) Laws of Motion and Momentum
3) Electrons, Waves and Photons
   a) Charge and Current
   b) Energy Power and Resistance
   c) Electrical Circuits
   d) Waves
   e) Quantum Physics

Year 2

1) Newtonian World and Astrophysics
   a) Thermal Physics
   b) Ideal Gases
   c) Circular Motion
   d) Oscillations
   e) Gravitational Fields
   f) Cosmology
2) Particles and Medical Physics
   a) Capacitance
   b) Electric Fields
   c) Magnetic Fields
   d) Particle Physics
   e) Radioactivity
   f) Nuclear Physics
   g) Medical Imaging

Expectations:
In order to be best prepared for A Level study, students are expected to complete a bridging activity from GCSE to A Level before the course commences. In lessons, students are required to carry out a number of practical tasks, both in groups and independently. Students will need to reflect on their own work and evaluate others, being prepared to articulate results and conclusions. Students are expected to bring a high level of creativity and adaptability to their work as well as a resilience in the application of mathematics to the study.

Prior reading is mandatory before each lesson, as is attempting questions to assess students' own understanding. Extended reading and annotations of notes are also expected and students are required to regularly assess their learning against the specification. We expect a minimum of eight hours work each week outside the lesson in order to be an excellent Physicist.

Extra-Curricular Activities/Independent Learning Opportunities:
We have had the opportunity as a Science Department to visit Iceland and see the Northern Lights (which is formed by the ionisation of the particles in our atmosphere by high energy cosmic radiation which is targeted over the north pole by the earth's magnetic field!). We have also been on a trip to CERN and the Large Hadron Collider. We have got a fantastic working relationship with Oundle School which means we have visited their laboratories for joint practical work.

Career Pathways:
Design Engineering, Architecture, Marketing, Automotive Design, Product Design, Graphic Design, Medical Physics, Particle Physics, Geophysics in Archaeology or Climate Models, Astrophysics and Astronomy, Teaching, and working in the Financial Services.

Student Testimonials:
"Hard work, but really enjoyable. It's really different from GCSE and much more fun. Physics goes really well with the other Sciences and Design."
"Really gets down to the fundamentals of the way the Universe works."
"Demonstrates your ability to cope with the latest discoveries and helps you to understand really difficult concepts and ideas easily."
"Being on Channel 4 News on the CERN trip and being able to show family and friends was incredible!"
"Meeting Peter Higgs and having a photograph with a Nobel Prize winner was unforgettable."