



## **Science: Our DNA**

**Head of Department: Ms Turner**

### **'Curiosity, Confidence and Courage'**

The Science department is committed to fostering each pupil's innate sense of curiosity and building the confidence they need to be successful life-long learners and problem solvers. We believe that all pupils will continue to engage with the scientific world beyond secondary school and it is our task to equip them with the critical thinking skills. We encourage our pupils to build an engineering mindset and develop the technological literacy they need to be fully engaged with the world around them.

Science is more than a single subject. It encompasses everything we see, hear, taste, smell and feel. Our staff are dedicated to creating a comprehensive curriculum which is planned by subject specialists. We are experts in our respective fields of study and this knowledge is embedded in our curriculum.

### **Key Stage 3**

Our goal in this key stage is to ignite the passion for questioning and investigating. Lessons are designed around the big questions that pupils have and teach the methods needed for pupils to be investigators. We strive to engage pupils in learning our subjects first hand through fun, practical experiences and laboratory investigations. Our Year 7 pupils in 2019-20 will be the very first cohort to embark upon the brand-new Ark Science Mastery Curriculum. The Mastery Curriculum, backed by extensive pedagogical research, aims to breakdown the key areas of science over the many years of a pupil's learning journey so that they achieve a much greater level of understanding across all areas of science over time.

- Science – Biology, Chemistry and Physics
- Computer Science

### **Key Stage 4**

In Key Stage 4 we build on the skills mastered in the previous key stage. Pupils are challenged to work and think more independently, especially around practical work. We use assessment data continually to identify areas of strength and places where targeted interventions can build confidence. Students are required to apply new concepts to different situations at Key Stage 4, which provides a challenging environment for learning.

- GCSE Sciences- Biology, Chemistry and Physics
- Food and Nutritional Science
- Computer Science

### **Key Stage 5**

At Sixth Form, students are stretched to become resilient and independent scientists. Lessons will focus not only on learning highly complex and detailed concepts, but also on the inductive reasoning and application of these concepts. Students learn their subject, but also the transferable skills which help them to be strong candidates for university and employment.

- Biology
- Chemistry
- Physics
- Professional Pathways – BTEC Extended Diploma Applied Science
- Psychology
- Computer Science

## **Scientific Skills**

The backbone of our science curriculum is the skills pupils need to be confident practitioners of the scientific method. The mastery of these scientific skills is built in to our curriculum and assessed in various ways. Learning to use specialist equipment like Bunsen burners and microscopes are fundamental to the development of young scientists. Measuring, graphing, analysing data and evaluating are regularly revisited to ensure confidence. At the heart of these skills is the teamwork required to be successful at any level of school or career, and we teach these skills through all key stages. Ultimately, with the development of these mindsets and practical skills, pupils can go on to investigate independently and indulge their own curiosities as future scientists.

## **The Team**

We are dedicated to teaching outstanding and engaging science lessons at all key stages. We aim to deliver lessons that inspire thoughtful questioning, creative problem solving, and constructive debate. We ask our pupils to stretch their knowledge and embrace their metacognitive processes. Our labs and classrooms are safe environments where all questions are valued. As teachers, we continually strive to improve our practice through collaborative planning and professional development. Just like Science itself – our pedagogical practice is constantly changing and adapting to every pupil that we meet, which is what makes it so fun!

## **Scientific Literacy**

Every pupil at Bolingbroke will leave our school with confidence in their scientific literacy. To us, this literacy encompasses a pupil's ability to use digital tools, decipher the Periodic Table. Use terminology as well as write code. We believe developing scientific literacy is key to creating lifelong learners of science who can continue to apply their scientific method or computational thinking beyond school and in to university or careers.

## **The Worldwide Classroom and Enrichments**

Science is not confined to a lab classroom. At Bolingbroke the world is our classroom and through our extensive programme of activities outside the regular science lesson, we open up the space in which we learn. Trips, enrichments, events and visitors expand our classroom to the world around us and augment our science curriculum.

## **Trips and Events**

- Invention Convention – all Year 7 pupils create a novel invention to solve the problem of their choice and present them to judges in December.
- British Science Week – a nationwide event wherein all pupils and students participate in a variety of activities and visits from special guests.
- Zoo trip – Year 12 psychologists observe and examine animal behaviours first hand at London Zoo.
- Science Museum – Year 7 pupils engage with all corners of the scientific world with a hands-on experience at the Science Museum in Kensington.
- Natural History Museum – Year 8 pupils investigate the vast diversity of the living world through the exhibits at the National History Museum. The dinosaurs are always a big highlight!
- Imperial College - Through various programmes, pupils and students participate in special events at Imperial College including the opportunity to work first hand with world leaders in the technology field.

## **Enrichments**

- Science Club – pupils can explore their curiosity about the world around them in a more relaxed environment. They work towards creatively solving real-life problems and following through with self-planned investigations. Past projects have included building water rockets and simple machines.
- Coding Club – pupils and students will learn and apply their computer science skills to create a variety of products using computer code.
- KS3 and KS4 Psychology Club.