SBC

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The UK's Number One
Summer School

COURSE OVERVIEW

Future Scientist

12-16yrs

Headington

At a glance

Introduction to Future Scientist

Future Scientists is designed for students aged 12–16 who want to challenge their understanding of the natural world and take their curiosity further. Across biology, chemistry and physics, you'll carry out experiments, test ideas, and develop the skills that make science meaningful: observation, analysis, and clear communication. The programme goes beyond classroom learning. You'll investigate real-world questions, work with your peers on group projects, and practise presenting your results as scientists do. By combining theory with hands-on enquiry, Future Scientists equips you with both subject knowledge and the ability to think critically about how science shapes our lives.

Academic Content

15 hours of subject-specific academic content per week with an experienced subject tutor, delivered through interactive and hands-on lessons

English Language Level

Students require a minimum English level of B1+ to enrol onto this programme.

About the programme

Future Scientists at Headington is a two-week programme for students who want to explore science in greater depth and understand how it applies to the world around them. You'll study biology, chemistry and physics through practical experiments, guided research and clear explanation, building confidence in how to design, test and present investigations.

The course strengthens your ability to work like a scientist. You'll learn how to plan experiments with care, record data accurately, and evaluate results critically. Alongside this, you'll examine current developments in science and consider the ethical and social questions that arise from them, encouraging you to think about the wider impact of discovery and innovation.

Collaboration is central. You'll take part in group challenges that require shared problem-solving and discussion, reflecting how scientific progress relies on teamwork as much as individual insight. Working closely with tutors who bring both subject expertise and teaching experience, you'll be supported to stretch your understanding and approach science with curiosity and precision.

By the end of the programme, you'll have gained a stronger grasp of scientific principles and practical skills, along with the confidence to explore them further at school, university, and beyond.

FUTURE SCIENTIST | 12-16 YRS | B1+ | 2 WEEKS | HEADINGTON

Key Learning Outcomes

1.

Understanding Core Scientific Principles

Develop a strong grasp of the key concepts in biology, chemistry and physics, while also seeing how these subjects connect to explain the natural world. You'll build knowledge that forms the foundation for more advanced study and gives you confidence in tackling new scientific ideas.

2.

Developing Practical Skills

Gain hands-on experience in designing and carrying out experiments, collecting data carefully and interpreting results with accuracy. These practical skills will help you approach problems methodically and understand how scientific knowledge is created in real settings.

3.

Thinking Critically About Science

Strengthen your ability to analyse evidence, weigh up competing arguments and reflect on the wider consequences of scientific discoveries. You'll learn to approach information with a questioning mindset, considering both the possibilities and the responsibilities that come with progress.

4.

Communicating Scientific Ideas

Practise explaining complex ideas in clear and engaging ways, whether through discussion, written work or visual presentation. By learning how to share your thinking effectively, you'll gain confidence in contributing to scientific conversations and working collaboratively with others.

Subject Theme

The Big Solutions Challenge

The Big Solutions Challenge gives students the chance to confront some of the greatest challenges facing our world today. Working in teams, you'll explore issues such as global health, climate change, peacebuilding, and the role of technology, thinking critically about what solutions might look like in the future. Each subject plays a part in shaping these answers: doctors lead health campaigns, scientists present breakthrough models, entrepreneurs pitch start-ups, leaders draft charters, and journalists bring stories to life. Over the course of the week, ideas are tested, refined, and brought into focus, preparing for a final showcase where projects are revealed to the whole community. The result is a live event of campaigns, inventions, and performances that demonstrates how young minds can approach the toughest questions with creativity and determination.

Fundamental concepts

Science sits at the centre of global challenges. From climate change to clean energy, breakthroughs depend on observation, experimentation, and problem-solving. Future Scientists at Headington explore these foundations by asking how scientific models can be used to imagine solutions for the world's biggest problems.

Future Scientist Frameworks

Projects follow the structure of scientific enquiry: identify a challenge, propose a hypothesis, test it through a model or experiment, and share the findings. Students work in teams to present their models at the Big Solutions showcase, where they must explain both how their design functions and why it matters.

Foundational Vocabulary

Hypothesis, model, experiment, variable, data, analysis, prototype, innovation, renewable, efficiency, sustainability, breakthrough, observation, demonstration.

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Time to Shine

Time to Shine gives every student the chance to practise public speaking in a structured setting. By researching, preparing and delivering a project to an audience, you build confidence in expressing ideas clearly and develop the ability to present with authority. It's an opportunity to refine communication skills that are valuable for academic study, professional life and beyond.

The Big Solutions Challenge ends with a live showcase where Future Scientists step forward to present their breakthrough models. Each team sets up their experiment and demonstrates it in action, showing how science can offer answers to some of the planet's toughest problems. The audience sees not just the finished model but also hears the reasoning behind it — the science, the choices, and the potential impact.

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Time to Shine Project: Week One

Design and demonstrate a model that provides clean energy. This could be a small solar array, a wind turbine, or a new method of storing power. The model must show how energy is generated and used, with students explaining why their solution could help reduce global dependence on fossil fuels.

Time to Shine Project: Week Two

Create an experiment that addresses food or water scarcity. Examples include a hydroponic system for growing plants, a water filtration design, or a method of recycling resources. The focus is on making the science visible and practical, proving how an idea might scale up to meet global demand.

Course Objectives

Welcome to Future Scientists, an inspiring and hands-on science programme designed for inquisitive students aged 12-16. At Headington School, we are passionate about nurturing the next generation of scientists by making science both accessible and exciting. This course allows you to explore a variety of scientific disciplines, from biology and chemistry to physics and environmental science. Whether you're a budding biologist or a future physicist, Future Scientists will ignite your curiosity and help you discover the wonders of the scientific world.

Module 1

Life and Living Systems

Explore the complexity of biology, from the structure of cells to the interactions within ecosystems. You'll investigate processes such as respiration, growth and adaptation, while also looking at how human activity affects the natural world. Practical lab work will give you experience in observation, data collection and analysis.

Module 2

Matter, Reactions and Energy

Delve into the principles of chemistry and physics by examining what matter is made of and how it behaves. You'll test chemical reactions, study the properties of materials, and explore how energy is transferred and transformed. Each activity links abstract concepts to experiments you can see, measure and explain.

Module 3

Earth, Space and Scientific Frontiers

Look beyond the laboratory to the systems that shape our planet and universe. From geological forces to the movements of planets and stars, you'll explore how science helps us understand both Earth and space. The module also introduces some of the latest discoveries in science, giving you a glimpse of where research is heading.

Academic Difficulty

No specialist knowledge is needed. The tasks are challenging but approachable, designed to spark curiosity and creativity. Students are guided step by step, from forming a question to building a model and explaining the results. The real challenge lies in making the science clear and convincing for an audience that may not share the same background.

Case Study

Bridging Theory and Real World Application

Scientific principles move directly into industry and global problem-solving. Energy companies rely on physics and engineering to design wind turbines, solar arrays, and new storage systems. Agriculture uses biology and chemistry to create high-yield crops, hydroponics, and methods for protecting soil. Water management combines environmental science with technology to filter and distribute clean supplies. By working on models linked to these areas, students see how the same theories they test in class are applied by professionals to address challenges of climate, food, and sustainability.

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Fieldwork Research

Work often takes place outside the classroom. Students record wind direction, test how materials respond to weather, or map spaces that could support food production. By linking direct observation with design, they see how science operates beyond the lab. Students run trials of their models, record results, and adjust their designs accordingly. Whether it is refining a water filter, altering the angle of a solar panel, or improving a growing system, the process mirrors the way scientists test and improve their work in real contexts.

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