

Key Stage 4 STEM

STEM stands for Science, Technology, Engineering and Maths. At The Observatory School, we teach the National Curriculum for Science and Maths, while also giving our pupils the opportunity to combine their science learning with related technology, engineering and maths skills. Our STEM curriculum has been carefully sequenced in order to support our pupils in developing a range of STEM skills as part of their science and maths learning.

Our STEM Curriculum Aims to:

- Develop in our pupils an enthusiasm for STEM, so that many may be inspired to pursue STEM subjects further on in their education.
- Equip our pupils with an understanding of the significance of STEM to their lives, both now and in the future, including understanding the relevance of STEM skills in the real world.
- Provide our pupils with a multitude of opportunities for engaging, hands-on scientific activities which will spark in them a love of scientific learning and discovery.
- Encourage our pupils to respect the natural world, and actively consider the part they can play in conserving it.
- Provide our pupils with the scientific knowledge and working scientifically skills necessary to ensure that they are well prepared for the next stage of their education – including secondary education, and beyond.

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Class	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p>Hamilton/Storey</p> <p>Year 10</p>	<p>Energy</p> <p>Explore sources of energy. Identify renewable and nonrenewable energy sources. How can we help the environment with our use of energy?</p> <p>Dyson air blade</p> <p>Investigate how bladeless Dyson fans work. Look at design features. Learn to safely use basic hand tools. Dismantle and reassemble a Dyson air blade to</p>	<p>Electrical Circuits</p> <p>The design process (planning, team roles, prototypes)</p> <p>Basic car maintenance</p> <p>How to check tyre pressures Measuring tread depth Topping up fluids Identifying liquid reservoirs, filters and other aspects of the car.</p>	<p>First Tech Robotics</p> <p>Introduction to the project. Assign team roles. Create team logo, moto and name. Understanding the function of a well organised engineering team.</p> <p>Dyson vacuum project</p> <p>Investigate how the dyson vacuum works with its 'cyclone' technology. Look at the design features. Dismantle and reassemble the vacuum to see internal</p>	<p>First Tech Robotics</p> <p>Start to decode the design brief. Develop early design concepts. Understand how each aspect of the design can help achieve the 'game' objective</p> <p>Forces</p> <p>Explore different forces and how they impact on movement. How are forces at work on an object moving at speed? How do engineers plan for forces impacting their designs? Practical activities exploring gravity</p>	<p>First Tech Robotics</p> <p>Begin robot build and coding. Practice driving and manoeuvring the robot to game specification Identify areas for development and implement upgrades.</p> <p>Block coding</p> <p>Practice using block coding to control a robot remotely (using the previous seasons competition robot)</p>	<p>First Tech Robotics</p> <p>Final pre competition checks Make any necessary adaptations to coding or design after final checks and review as a team. Design and order team shirts</p>

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