Thomas Mills
High School & Sixth Form

CURRICULUM OVERVIEW: Biology

The intent of the Year 8 Biology curriculum is to introduce pupils to the importance of biological interactions in ecosystems and to develop skills and knowledge that will provide the foundations required for studying GCSE Biology. We explore topics including plant structure, plant reproduction and photosynthesis. We later look at the concept of an ecosystem and relationships between organisms. This is followed by an introduction to the molecule called DNA, variation in organisms and the need to conserve endangered species. Throughout the two units studied in Year 8, there are practical and research opportunities to develop and embed analytical and practical skills.

We aim to:

- Instil curiosity about the natural world and how life interacts and is interdependent.
- Build foundational knowledge in key biological concepts such as photosynthesis, DNA structure, classification, and ecosystems.
- Develop pupils' ability to observe, question, and investigate living organisms using scientific methods.
- Encourage the use of correct scientific vocabulary to describe biological processes clearly and confidently.
- Promote respect for all forms of life and an appreciation of the interdependence of organisms and their environments.
- Lay the groundwork for future learning in biology by developing critical thinking and problem-solving skills.

Through engaging, practical lessons and real-world applications, pupils will begin to understand the relevance of biology to themselves, society, and the wider world.

Note: Due to the carousel-based teaching schedule within Science in Year 8 pupils will complete a total of 6 science units, 2 from Biology, Chemistry and Physics during the academic year.

Year 8

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Term	Topic	Knowledge and Skills	Useful Links
1	**B3 – Plants and Ecosystems**	**Knowledge:** In this unit, pupils delve into plant structure, reproduction, and photosynthesis. They learn about the various parts of plants, their functions, and how plants reproduce. The process of photosynthesis is explored in detail, highlighting how plants convert sunlight into energy. Following this, pupils study food chains and ecosystems, understanding the interdependence of organisms and the flow of energy through different trophic levels. They investigate how plants form the basis of most food chains and the role of producers, consumers, and decomposers in ecosystems. This comprehensive study enhances their knowledge of biological interactions and environmental sustainability. **Skills:** Pupils carry out some investigative techniques to test for the products of photosynthesis. Microscopes are also used to examine plant leaves. This develops hands-on investigative techniques in the laboratory environment and pupils follow basic methodology.	KS3 Biology - BBC Bitesize Educake - Online Formative Assessment for Homework and Classwork Science, secondary, Year 7 - Lesson listing | Oak National Academy (Ecosystems – taught in Year 8 at TMHS)
Assessments		A mid-unit low-stakes assessment and a more formal end-of-unit assessment are completed under exam conditions. Pupils are informed of these in advance with revision opportunities given for homework and in class,	

		if time permits. These assessments are designed to check understanding of key concepts and identify areas for improvement. Pupils receive feedback on both assessments, with time allocated in class to review answers and address misconceptions. Checklists that breakdown learned criteria are also used in the unit to help pupils monitor their own progress and reflect on their understanding of the content.	
2	**B4 – Variation, Inheritance and Survival**	**Knowledge:** In this unit, pupils study DNA, variation, and inheritance, learning how genetic information is passed from one generation to the next. They explore the structure of DNA, the role of genes, and how mutations can lead to genetic diversity. Following this, pupils delve into natural selection and evolution, understanding how species adapt over time through advantageous traits. They examine the evidence for evolution and the mechanisms driving it. The unit concludes with a study of endangered species, highlighting the impact of human activities on biodiversity and the importance of conservation efforts. This comprehensive approach fosters an understanding of genetics and environmental science. **Skills:** Pupils learn to collect data on class variation and present this graphically, with appropriate scaling and units. This develops their graph drawing abilities, an important transferable skill in the sciences. Pupils are also encouraged to be curious about the world around them, researching current threats to global biodiversity.	KS3 Biology - BBC Bitesize Educake - Online Formative Assessment for Homework and Classwork Science, secondary, Year 7 - Lesson listing | Oak National Academy (DNA and variation - taught in Year 8 at TMHS)

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