

"Science is simply the word we use to describe a method of organising our curiosity."

The programme for years 7 – 11 has staff teaching a single class, with rotating topics/subjects. There is varied order of topics for classes to allow for the rotation of practical equipment. Students will complete a biology, chemistry and then physics topic followed by an assessment. This process will then repeat again.

Staff are to use the <u>Curriculum Road Map</u> in the Science Drive to ensure that they rotate at the appropriate times.

| Торіс | Unit title | Key knowledge/ Content to learn and retain | Essential skills to acquire (subject & generic) | Anticipated misconceptions | Links to previous KS | Links to future KS | Opportunity for stretch for high prior attainers |
|-----------------------------|-------------------------|---|--|--|--|---|---|
| One | Ecology (Long Topic) | Biotic and Abiotic factors Competition between organisms Food chains, webs and trophic levels Sampling techniques Human impact on biodiversity (Triple Only) Decay and nutrient cycles (Triple Only) Human food production | Practical sampling techniques Recording accurate data Representing and interpreting data in tabular and graphical form Extended Writing Reading for comprehension | Students often think of humans as organisms beyond or outside of food webs and the larger ecosystem, so it is important that they understand the role humans play The difference between Quadrat and Transect sampling | This unit builds from the study of interdependence in KS3. Students should already have a basic understanding of food chains and how energy flows and is lost along them In KS3 students also study the importance of plants to human food security. This unit also follows directly on from HT1, in which students looked at evolution and how organisms compete for survival | Ecology forms an entire unit of study at Biology A-Level, where students will study all of the concepts looked at here in greater depth. | Consider why and how energy is lost along a food chain Evaluate sampling techniques and suggest why a given technique may be used Suggest ways to improve food security |
| SMSC & British Values | Humans as a wi | Humans as a wider part of the ecosystem and our place and role in protecting the environment; including the consequences if we fail to do so. | | | | | |

| Cultural Capital | Study of differe | nt ecosystems, climates and habitats both | n in the UK And world wide | | | | | |
|-----------------------------|---|---|---|--|--|---|--|--|
| Career Link | Conservationist Farmer Food Scientist Careers with the | e environment agency or DEfRA | | | | | | |
| Two | Inheritance, variation, and evolution | Evolution by natural selection Evidence for evolution, including fossils and genetic evidence Classification How human understanding of genetics has changed over time, Cloning and genetic engineering | Calculation of simple probability Writing and interpreting tree charts Extended writing | Alleles as different genes rather than different versions of a gene Confusion between genotype and phenotype | This unit builds on the study of heredity and evolution that is completed in year 8 | Study of genetics forms the basis of an entire unit of study in both A- Level biology and Applied human Biology | Advantages and disadvantages of sexual be asexual reproduction and why organisms capable of both would choose a strategy Why scientists did not initially accept ideas of evolution Comparison of Lamarck and Darwin | |
| SMSC & British Values | Inherited disorders and issues around family planning Darwin as a British Scientist | | | | | | | |
| Cultural Capital | Charles Darwin and the voyage of the beagle Historical debate around evolution | | | | | | | |
| Career Link | Medical researc Family planning Genealogist | adviser | | | | | | |

| Conservationist | | | |
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