

## Curriculum map - Science

### Year 11

There are less topics this year due to the presence of 2 sets of mock exams and enough time for effective revision and exam technique teaching to take place. There are end of topic tests but these are administered mainly on an exam practice basis and it is not always practical to administer them. The main assessment taking place this year is from the mock exams.

Wherever possible the same teacher will stay with the groups from 10 to 11 and this ensures the teacher assessment of progress can begin at the very beginning of the year as relationships have already been formed. All students are taught by subject specialists.

As with the previous GCSE years, practical skills are assessed within the GCSE through exam questions. During the required practicals there is a common proforma for writing up the method which ensures this is a standardised practice which will ready them for their GCSEs.

	Ideas Covered	Why is it Important?	Why Now?	Impact	Assessment
Homeostasis	Concept and application of the nervous system Concept and application of homeostasis	Cells in the body only survive with a narrow physical and chemical range and so require constant monitoring. This also links to hormonal coordination that controls the menstrual cycle and therefore fertility	This module ties together many aspects of the prior GCSE modules (e.g. cells, cell transport, organ systems)	Students will be able to compare nervous and endocrine systems, and describe the hormones involved in the menstrual cycle	Mock assessments
Variation and Evolution	Heredity through genes Evolution	Scientists have now discovered ways of modifying genes which has had impacts on food production and disease treatment, although this is a controversial area. This also links to another area where students review evolution and outline the evidence for it	This is the last content in biology and that ties together many aspects of the prior GCSE modules (e.g. cells, reproduction, mitosis and meiosis)	Students will be able to describe the processes of selective breeding, genetic modification and evolution, and outline their uses and evaluate biotechnological advances	Mock assessments
Organic chemistry	Hydrocarbons and their processing Alkanes and their structure	Fossil fuels still play a large part in life and until newer technologies are developed this understanding is necessary for interpreting how these fuels are used	This topic has links to many other topics and can be used to bring up overarching concepts	Students will be able to describe how crude oil is separated and how the fractions are used.	Mock assessments

	Ideas Covered	Why is it Important?	Why Now?	Impact	Assessment
Chemical analysis	Chromatography	This teaches experimental and interpretation skills that can be used in many situations	The emphasis on the correct set up of equipment and analysis is a good basis to the higher level questions asked in the exams	Students will be able to describe how to carry out chromatography and analyse results	Mock assessments
Speed	Calculation and application of speed. Definition and application of Newton's laws Momentum	This topic is directly applicable to driving which is a skill some will want to learn fairly shortly after. Newton's laws seem like an abstract concept but once applied explain what happens to objects in motion	This is the closest to teaching these concepts to when they will be truly applicable	Students will be calculating thinking, braking and stopping distances and what they are affected by. Students should be able to state Newton's laws and how they are applicable	Mock assessments
Radiation	Atomic structure and evidence for this structure Radioactivity Definition of alpha, beta and gamma particles	This topic explains nuclear power and the international disaster at Chernobyl. Radioactivity is a misunderstood word and an understanding is necessary for interpreting real life situations	In order to give examples of radiation students have to be of a certain age and therefore this topic has to be completed as late as possible at GCSE	Students will be able to describe the difference between alpha, beta and gamma radiation and to calculate half life	Mock assessments
Astrophysics (Tr only)	The creation of the universe, our solar system and the future of all the stars in the universe. Description of planetary and satellite orbits. Factors affecting the thermal energy being absorbed by the earth	This topic explains the creation of the universe and our solar system. It includes descriptions of the lifecycle of stars and the orbits of objects in space.	This builds on work done previously in year 7 and links directly to the a level physics astrophysics topic	Students will be able to describe how the universe and our solar system was created and the future life cycle of our sun and other stars.	Mock assessments

	Ideas Covered	Why is it Important?	Why Now?	Impact	Assessment
Pressure and moments (Tr only)	Factors affecting pressure in liquids and gases. How levers act and simple machines.	Factors which effect the pressure in liquids and gases and how this can be used. Also how very simple machines such as levers are used in our everyday lives	This builds on the pressure and moments topic from year 8 and also links to the GCSE forces topic.	Students will be able to understand why the pressure of a gas or liquid changes and the impact of that. Students can identify the use of simple machines such as levers and understand how they help our everyday lives	Mock assessments