



OVERVIEW	<p>At The Lowry Academy our aim is to ensure all children are scientifically literate individuals who can critically evaluate information to make informed decisions about their lives. At The Lowry Academy we equip pupils with both the knowledge and skills to understand the world around them and develop curiosity. A wealth of opportunities to learn about our local and diverse scientific community shows every child how they can involve science in their future, should they wish to. In Science in Year 9, students learn about biological systems and processes. In this topic, there are many links to the cells unit from Year 7. In chemistry in Year 9, we study reactivity which is linked to the structure of the atom that students learnt about in Year 8 in the periodic table unit. Year 9 pupils will also study matter, which studies density – the Year 7 study of particles being foundational knowledge they have already built for this topic.</p>		
AUTUMN	<p>9PF – Forces in Action This unit looks at how forces can cause turning effects, how this can be amplified, how forces can cause deformation and what elastic deformation is, how forces are linked to energy (work done) and how machines can reduce the force needed to do a particular job.</p> <p>9CR – Reactivity The unit begins by recapping the basic atomic structure and electron configuration and then adds on neutron numbers, atomic mass and formula mass. Writing chemical formulae and balancing equations are brought together too. The latter part of the scheme introduces the reactivity series and how it can be used to predict and/or explain reaction outcomes.</p>	<p>ASSESSMENT</p> <p>Fluency is completed once a week which is based on skills.</p> <p>December End of Topic Assessment on 9PF & 9CR (30 mins).</p>	<p>PERSONAL DEVELOPMENT</p> <p>Students learn to develop their skills through group practical work for investigated Hooke's Law.</p>
SPRING	<p>9CE – Energetics and Rates This topic will introduce the idea of rates and factors that affect rates for the first time. How rates are measured is covered first, focusing on the element of time that is essential. The ideas of surface area and catalysts are introduced. The unit then covers types of reaction – endothermic, exothermic, combustion as a type of oxidation reaction and thermal decomposition.</p> <p>9PS – Sound Waves The unit begins by reviewing the different types of wave. The idea of absorption of energy leading to an increase in the thermal store of a substance is revisited here too. The unit then looks at the speed of sound in different media. Then, uses of ultrasound and how microphones and loudspeakers work.</p>	<p>ASSESSMENT</p> <p>Fluency is completed once a week which is based on skills.</p> <p>March End of Topic Assessment on 9CE & 9PS (30 mins).</p>	<p>PERSONAL DEVELOPMENT</p> <p>Students learn about the different uses of modern technology – ultrasound scans that use sound waves to build a picture of the baby in the uterus.</p>
SUMMER	<p>9BB – Biological Systems and Processes The unit begins with students having a focus on the skeletal and muscular systems. Students will be introduced to the concept of antagonistic muscle pairings and will investigate the forces exerted by different muscles involved in movement. Students will then examine the respiratory system, looking at the mechanism of breathing, lung volumes and the role of diffusion in gas exchange. The impacts of drugs and exercise on the respiratory and other systems will be explored. Finally, students will consider the basis of life by investigating the structure and function of DNA.</p> <p>KS4 – P3 – Particle Model Students look at how the particle model is widely used to predict the behaviour of solids, liquids and gases. Students then use this to explain a wide variety of observations and learn how engineers use these principles when designing vessels to withstand high temperature and pressure, such as submarines and spacecraft.</p>	<p>ASSESSMENT</p> <p>At KS4, each topic has an end of unit test.</p> <p>Fluency is completed once a week which is based on skills.</p>	<p>PERSONAL DEVELOPMENT</p> <p>Students learn the effects of smoking and drinking alcohol to the body.</p>

Useful resources for supporting your child at home:

- **BBC Bitesize** - KS3 Science - [KS3 Science](#) - [BBC Bitesize](#)
- **Knowledge Organiser** – The science knowledge organiser contains all the key definitions students need to know for each unit. You could test your child on their ability to remember these facts, or get your child to self-quiz using the 'Look, Cover, Write, Check' technique

Homework

Homework will be set weekly on Sparx Science and we will inform students which section of the knowledge organiser to self-quiz themselves on.