



Department Staffing

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Our Aims

In the science department, we aim to find the potential in all our students and bring it to life in our science labs. Science is not only fascinating to study - understanding the key ideas in biology, chemistry and physics allows you to appreciate how the world, and everything in it, works and interacts. We work to grow and nourish aspiration in our students, and encourage a logical and scientific approach to thinking that applies both in and out of the lab.

Key Stage 3 – Science

Key stage 3 science at NOA aims to provide an engaging and comprehensive introduction to key scientific topics and ideas, encompassing both traditional subjects and cutting-edge research and applications.

We follow a three-year model for KS3, tailored to the current (2014) curriculum guidance and is engaging for students whilst providing a strong foundation for their future GCSE studies. Lessons include a variety of learning activities incorporating practical experiments, individual and group work, literacy support and extended writing practice.

Year 7 learners (as of September 2016) and Year 8 learners (as of September 2018) are now being assessed through a combination of traditional written assessments, and in-class, teacher-devised assessments. Students' progress is measured against a series of Key Performance Indicators (KPIs); these KPIs represent the essential knowledge for the year and the expectation is that students meet all KPIs for the year, in order to provide a strong foundation for year 8.

Key Stage 3 Programme of Study (Timeline)

Y e a r 7	Biology: Cells, tissues and organs; Reproduction and variation In biology you will discover what plants and animals are made of. You will also meet some tiny organisms that can only be seen under a microscope. You will explore how different structures work together to keep an organism alive. Finally, you will discover how new plants and animals are created through the process of reproduction.
	Chemistry: Particles and their behaviour; Chemical reactions In chemistry you will learn about the atoms that make up everything on Earth. You will explore how chemical reactions make vital materials, and transfer energy for almost everything we do.
	Physics: Forces and motion; Energy In physics you will learn about the forces that keep you from falling through the floor and allow astronauts to stand on the Moon and about how energy is transferred from one store to another, but never created or destroyed.
Y e a r 8	Biology: Ecological relationships and classification; Digestions and nutrition In Biology you will compare the effects of healthy and unhealthy lifestyles on your body. You will look at why organisms need energy to function effectively. Finally, you will investigate the differences that exist between organisms, and why this is important for their survival.
	Chemistry: Materials and the Earth; The Periodic Table In Chemistry you will learn about the structure of the Earth, and the rocks of its crust. You will discover how we separate mixtures, and use chemical reactions, to obtain the materials we need from the Earth and its atmosphere. You will also

	<p>explore patterns in chemical reactions. You will identify patterns in the properties of elements, and learn how to use the Periodic Table to predict properties.</p> <p>Physics: Light and Space; Electricity and Magnetism In physics you will discover how circuits work and how the electricity in your house is generated. You will learn why different objects appear to be different colours and how to identify different objects in the night sky.</p>
Y e a r 9	<p>Biology: New technology; Turning points in biology; Detection In this unit, you will begin by looking at genetics. This includes genetically inherited disorders and how plant and animal genes can be changed to alter an organism's characteristics. You will also study how you can protect yourself from disease through immunisation and treat conditions using antibiotics. Finally, you will find out how forensic scientists help to solve crimes through the analysis of evidence found at the scene of a crime.</p>
	<p>Chemistry: New technology; Turning points in chemistry; Detection In this unit you will learn about nanoparticles. Nanoparticles make exciting new materials, with properties that make them perfect for strengthening sports equipment, protecting electronic devices and treating disease. You will also learn about vital turning points in chemistry. How did scientists find out what's in an atom, and what fossils tell us about the history of life on Earth?</p>
	<p>Physics: New technology; Turning points in physics; Detection In this unit you will learn about how technology, from mobile phones to hospitals, has changed the way that we live our lives. You will learn how our ideas about the Universe have changed, and how people discovered electromagnetism and radioactivity. You will also learn about how scientists look for aliens, new particles, and how GPS works.</p>

Home Learning

Learners will all receive Knowledge Organisers for each topic that they can use independently, at home to consolidate knowledge. Students' retention of this information will be assessed through 'Memory Platform' quizzes at the start of every lesson to enable students and teachers to identify and address gaps in the learners' knowledge. Year 7, 8 and 9 will also partake in one science project during the year, which will run for a whole term. Students are expected to bring teachers evidence of their work each week that the project runs, as well as submitting the finished project. Students will be supported by their teachers in preparing for this and all information will be uploaded onto go4schools.

Key Stage 4- Science

GCSE Science provides the foundations for understanding the material world. Scientific understanding is changing our lives, and is vital to the world's future prosperity. Learning the essential aspects of the knowledge, methods, processes and uses of science helps students to appreciate how the complex and varied phenomena of the natural world can be described in terms of a small number of key ideas.

Science education is important in terms of skills that can be used outside of the classroom; 'thinking scientifically' involves problem solving, prediction, accurate observation and common sense – all skills that are highly transferrable. We aim to teach science in a way that is both effective and highly engaging for students; our team of passionate teachers are fascinated by the topics we teach, and enjoy planning active and diverse learning activities.

Key Stage 4 Programme of study (Timeline)

Year 10 and 11 students are following the new AQA GCSE Synergy curriculum. New GCSE specifications, released in 2016 for science, now include more content and an increased focus on the application of maths skills in science. The Synergy programme of study awards a double GCSE. Some students are invited to choose the option of studying separate sciences, which will result in them being awarded three separate GCSEs in biology, chemistry and physics.

There is no controlled assessment component in the new GCSE specifications. Practical work is still an important part of science learning, and students will have the opportunity to complete practical investigations as part of their programme of study. Rather than assessing this through lab reports, knowledge of practical skills is now assessed in the exams at the end of year 11.

All examinations are sat at the end of year 11. Students will sit four papers in total – two covering Life and Environmental Sciences, and two for Physical Sciences; all exams are 1 hour 45 minutes long and contribute 25% to the GCSE.

Home Learning

All parents are encouraged to support their child by checking go4schools; staff within the faculty set homework regularly for students using this resource.

The department sets one piece of home learning per week, although the format will vary depending on the purpose of the activity. Typical activities could include worksheets to support or extend learning from lessons, research, summary or extended writing to develop scientific literacy, or revision for end of chapter assessments. Home learning is assessed in line with the department and school policies, OGS grades are returned to students and results are used to plan future teaching activities in lessons.