

Year 7 SCIENCE

Science in Year 7 aims to provide pupils with a varied and interesting introduction to relevant scientific principles which will underpin their future understanding of science. The development of practical skills is a very important aspect of the course and pupils engage in a comprehensive programme of practical work which gives them the opportunity to investigate at first hand the science phenomena being studied.

B Miller Head of Science

Topic/Term	Terms 1/2/3 - Introduction and safety in science
Key competencies (student abilities)	An introduction to the concept of 'Scientific method' and the skills needed to successfully plan, carry out and analyse the results of a scientific investigation. The skills of using appropriate apparatus safely and of graph plotting are also integral to this unit of work. Pupils develop these skills through work on chemical and physical change, the effects of forces, and on pressure.
Assessment	An examination of science key skills with a focus on reading and interpreting data.
Links to CES learning Charter/IB learner profile	The aim of this topic is for students to develop their scientific knowledge and inquiry skills.

Topic/Term	Cells and their function
Key competencies (student abilities)	The basic differences in the structure of animal and plant cells are emphasised, as are the functions of the major cell organelles. Pupils carry out basic preparation and viewing of microscope slides. Specialisation of different types of cell is covered, as are the characteristics of living things and the basic principle of division of labour within organisms.
Assessment	This topic will be assessed by a formal end of unit test as well as project/lab work and on students skills.
Links to CES learning Charter/IB learner profile	As inquirers, it is hoped students will develop their natural curiosity and acquire the skills necessary to conduct inquiry and research and show independence in learning. We wish for the students to actively enjoy learning and this love of learning will be sustained throughout their lives.

Topic/Term	Particles
Key competencies (student abilities)	Classification of materials into their correct group, and an appreciation of particle theory leading to pupils being able to describe the arrangement, proximity and motion of particles in solids, liquids and gases. The particulate theory of diffusion, gas pressure and the contraction and expansion of metals is taught. Pupils explore solubility and have plenty of opportunity to separate mixtures using a variety of techniques.
Assessment	This topic will be assessed by a formal end of unit test as well as project/lab work and on students skills.
Links to CES learning Charter/IB learner profile	Students will exercise the traits of a knowledgeable human being as they explore concepts, ideas and issues that have local and global significance. They will acquire in-depth knowledge and develop understanding across a broad and balanced range of issues. Reflective students are able to assess and understand their strengths and limitations in order to support their learning and personal development.

Topic/Term	Electricity and magnetism
Key competencies (student abilities)	How does an electric circuit work? We know that there must be an energy source and something to transform the energy. Some people have ideas about electric circuits that need to be changed – for example, that voltage ‘flows’ around a circuit (it doesn’t); that you can ‘put voltage’ into a light bulb (you can’t); or that batteries ‘provide electrons’ for a circuit (they don’t). We will also investigate the relationship between electricity and magnetism.
Assessment	This topic will be assessed by a formal end of unit test as well as project/lab work and on students skills.
Links to CES learning Charter/IB learner profile	Students will exercise the traits of a knowledgeable human being as they explore concepts, ideas and issues that have local and global significance. They will acquire in-depth knowledge and develop understanding across a broad and balanced range of issues. Reflective students are able to assess and understand their strengths and limitations in order to support their learning and personal development. As inquirers, it is hoped students will develop their natural curiosity and acquire the skills necessary to conduct inquiry and research and show independence in learning. We wish for the students to actively enjoy learning and this love of learning will be sustained throughout their lives.

Topic/Term	Reproduction
Key competencies (student abilities)	Pupils are taught the basic principles of human sexual reproduction, pregnancy and birth from a principally scientific standpoint. Flower structure, pollination, seed formation and dispersal are also studied.
Assessment	This topic will be assessed by a formal end of unit test as well as project/lab work and on students skills.
Links to CES learning Charter/IB learner profile	Students will exercise the traits of a knowledgeable human being as they explore concepts, ideas and issues that have local and global significance. They will acquire in-depth knowledge and develop understanding across a broad and balanced range of issues. Reflective students are able to assess and understand their strengths and limitations in order to support their learning and personal development.

Topic/Term	Acids
Key competencies (student abilities)	Pupils are taught to identify some common acids and alkalis and to use a range of indicators. Pupils prepare indicator solutions from plant materials and use these in their practical work. The theory of neutralisation is covered and is linked to practical applications such as toothpaste and indigestion powders.
Assessment	This topic will be assessed by a formal end of unit test as well as project/lab work and on students skills.
Links to CES learning Charter/IB learner profile	Students will exercise the traits of a knowledgeable human being as they explore concepts, ideas and issues that have local and global significance. They will acquire in-depth knowledge and develop understanding across a broad and balanced range of issues. Reflective students are able to assess and understand their strengths and limitations in order to support their learning and personal development.

Topic/Term	Energy
Key competencies (student abilities)	Pupils are taught the major ways in which energy may be usefully transferred or stored and consider the law of energy conservation. The major renewable and non renewable energy sources and their relative uses are covered, as are the consequences of over use of fossil fuels on the environment. Project work, in which pupils are asked to research and present information concerning energy resources, is also undertaken.
Assessment	This topic will be assessed by a formal end of unit test as well as project/lab work and on students skills.
Links to CES learning Charter/IB learner profile	Students will exercise the traits of a knowledgeable human being as they explore concepts, ideas and issues that have local and global significance. They will acquire in-depth knowledge and develop understanding across a broad and balanced range of issues. Reflective students are able to assess and understand their strengths and limitations in order to support their learning and personal development. As inquirers, it is hoped students will develop their natural curiosity and acquire the skills necessary to conduct inquiry and research and show independence in learning. We wish for the students to actively enjoy learning and this love of learning will be sustained throughout their lives.

Topic/Term	Genetics/Differences
Key competencies (student abilities)	Unless you are an identical twin, your genome is unique. Yet every cell in your body contains the same information, recorded in its DNA. The DNA within each of your cells was contributed by your biological parents and theirs by your grandparents and so on, back in time. We will look at why we look like we do and investigate if all of our features are inherited or perhaps a product of our environment.
Assessment	This topic will be assessed by a formal end of unit test as well as project/lab work and on students skills.
Links to CES learning Charter/IB learner profile	Students will exercise the traits of a knowledgeable human being as they explore concepts, ideas and issues that have local and global significance. They will acquire in-depth knowledge and develop understanding across a broad and balanced range of issues. Reflective students are able to assess and understand their strengths and limitations in order to support their learning and personal development.

Topic/Term	Elements and compounds
Key competencies (student abilities)	The world around us chemical. Everything we eat, touch, see and feel is made of chemicals. In this unit we will study the difference between elements, compounds and mixtures and how the properties of a compound differs from the properties of the elements from which it is made. We will also investigate how we can separate mixtures and compounds, if separation is possible at all.
Assessment	This topic will be assessed by a formal end of unit test as well as project/lab work and on students skills.
Links to CES learning Charter/IB learner profile	Students will exercise the traits of a knowledgeable human being as they explore concepts, ideas and issues that have local and global significance. They will acquire in-depth knowledge and develop understanding across a broad and balanced range of issues. Reflective students are able to assess and understand their strengths and limitations in order to support their learning and personal development.

Topic/Term	Forces
Key competencies (student abilities)	What are forces? What can they do? Forces are pushes or pulls that can change the shape or size of an object or the speed things are moving (make them move faster or slower) or change the direction of a moving object. We will study different types of forces and their effects on motion of objects, such as but not limited to friction (or drag) and upthrust. You will learn to recognise balanced and unbalanced forces and their effects on everyday objects.
Assessment	This topic will be assessed by a formal end of unit test as well as project/lab work and on students skills.
Links to CES learning Charter/IB learner profile	Students will exercise the traits of a knowledgeable human being as they explore concepts, ideas and issues that have local and global significance. They will acquire in-depth knowledge and develop understanding across a broad and balanced range of issues. Reflective students are able to assess and understand their strengths and limitations in order to support their learning and personal development. As inquirers, it is hoped students will develop their natural curiosity and acquire the skills necessary to conduct inquiry and research and show independence in learning. We wish for the students to actively enjoy learning and this love of learning will be sustained throughout their lives.

Topic/Term	Chemical reactions
Key competencies (student abilities)	How and why do elements and compounds react? Can we make predictions on the reactions that may occur between two elements? Are all the elements in the periodic table reactive? This unit will investigate these questions and give students tools they can use to make informed predictions with regards to what may or may not happen when two elements collide.
Assessment	This topic will be assessed by a formal end of unit test as well as project/lab work and on students skills.
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Topic/Term	Classification
Key competencies (student abilities)	There are so many species that we need to put them into groups. This is called classification . The first set of groups that organisms are divided into are called kingdoms . The two largest kingdoms are the plant kingdom and the animal kingdom . The main difference between these two kingdoms is that plants can make their own food and animals cannot. The animal kingdom is divided into other groups. The vertebrates are animals that have a backbone . There are five sorts of vertebrate. There are another eight groups which are all invertebrates . The most important groups to know about are in bold type.
Assessment	This topic will be assessed by a formal end of unit test as well as project/lab work and on students skills.
Links to CES learning Charter/IB learner profile	Students will exercise the traits of a knowledgeable human being as they explore concepts, ideas and issues that have local and global significance. They will acquire in-depth knowledge and develop understanding across a broad and balanced range of issues. Reflective students are able to assess and understand their strengths and limitations in order to support their learning and personal development.

Examples of homework tasks	<ul style="list-style-type: none"> • Lab reports • Essays • Worksheets on skills (reading & comprehension, graphing, balancing equations) • Questions from textbook • Research
Study equipment needed	Science students are expected to come equipped with the standard lesson equipment plus various mathematical equipment (ruler, compass, protractor) as well as colouring pencils
Useful websites	http://www.bbc.co.uk/education/subjects/zng4d2p http://www.planet-science.com/categories/parentsteachers/science-resources/2013/04/online-revision-resources-for-ks2,-ks3-and-gcses.aspx http://www.rsc.org/periodic-table
Contact in school	bmiller@cesegypt.com Mr Miller

