CROFT COMMUNITY SCHOOL

Key Stage 4 overview
AQA Science Double Award

	Autumn term
Year 10	**Basic Skills tests** Pupils will revisit a range of basic scientific skills in preparation for safe completion of the teacher devised assessments (TDA) within each component area. **The Human Body** In this component pupils will human body is composed of structures called organs, which are organised into organ systems that carry out all of the key processes of life. They will recall that each of these systems all require energy, which is contained in food and released in the cell by respiration. Pupils will learn that the organ systems are responsible for delivering food and oxygen to the cells and taking away waste. They will recall and describe the functions of these key processes, including reproduction, are coordinated by the nervous system and a hormone system. Pupils will demonstrate an understanding that a healthy body can be maintained by a balanced diet, exercise and a healthy lifestyle. Health can be damaged by microbes, which can cause infectious diseases. They will explore how the body can defend itself against most diseases but will sometimes need drugs in order to alleviate the symptoms and speed recovery. **TDA**: Investigating which food (biscuits or crisps) contain the most energy. **ESA:** Component 1

	Spring term
Year 10	**Elements, mixtures and compounds** In this component pupils will learn that matter is composed of tiny particles called atoms and there are about 100 naturally occurring types of atoms called elements. Pupils will show knowledge of how elements are shown in the Periodic table and are either metals or non-metals. They will learn that atoms are the building blocks for all substances and two or more elements combine chemically a compound is produced. Pupils will have the opportunity to explore how different substances have different combinations of atoms joined together in different ways, which gives them different properties, such as whether they are solid, liquid or gaseous at room temperature. **TDA**: Investigating the melting point of chocolate Pupils will learn that many materials we use are mixtures and that mixtures can be separated by processes such as filtration. Pupils will also consider how polymers have many useful applications. **TDA**: Investigating the different colours in food colouring using paper chromatography **ESA:** Component 3

	Summer term
Year 10	**Energy, Forces and Structure of matter** In this component pupils will learn that forces are pushes or pulls, and if a force causes an object to move then work is done and energy is transferred. They will recall that energy cannot be created or destroyed but can be stored in many different ways, although when energy changes to being stored in a different way, some is always 'wasted' as heat. **TDA:** Investigating which cup keeps my cup of tea the hottest the longest Pupils will be able to recall that a braking force will cause an energy transfer that makes a vehicle slow down and heats the brakes. They will consider how braking distance of a vehicle depends on many different things, such as the speed of the vehicle – speed being measured in units such as miles per hour or metres per second. Pupils will also learn that energy resources available to use may be divided into renewable and non-renewable. They will recall that energy can also be released from atoms, which contain smaller particles such as neutrons and protons in the nucleus, because atoms can break down to emit particles or gamma rays. **ESA:** Component 5

	Autumn term		Spring term		Summer term
Year 11	**Environment, Evolution and Inheritance** In this component pupils will learn that life on earth is dependent on photosynthesis to fix carbon dioxide and produce the organic molecules used as the fuels for respiration and life processes. They will consider how living organisms interact with one another and their environment in many different ways and discuss that human behaviours may have beneficial or detrimental effects on natural populations and the environment. world. Pupils will begin to explore how life on earth has evolved over time by natural selection, which accounts for biodiversity and how organisms are related and consider how characteristics of living things depend on both their environment and their genome. Pupils will have the opportunity to research how humans can now use genetic engineering to modify organisms. **TDA:** Investigating whether or not 2 characteristics are linked e.g. finger length and height. **ESA:** Component 2		**Year 11**	**Chemistry in our world** In this component pupils will learn how acids react with metals, alkalis and bases to produce compounds known as salts. They will consider how any chemical reactions produce a change in temperature and that chemical reactions can be made to go faster or slower by changing the conditions. This topic will provide pupils with the opportunity to research how the Earth's atmosphere has changed over billions of years and look at how human activities increase the amounts of some substances in the atmosphere. **TDA:** Investigation TBC **ESA:** Component 4		**Year 11**	**Electricity, magnetism and waves** In this component pupils will learn that electricity is used in domestic and industrial situations to supply energy. They will demonstrate an understanding that electric current is a flow of electrical charge and measured in amps. They will be able to recall how direct current (dc) is supplied by cells and alternating current (ac) is supplied by the mains, but in both cases the size of the current depends on the resistance in the circuit. Pupils will carry out an investigation of how current flows through a coil of wire to form an electromagnet and that this is like permanent magnets and can exert a force over a distance. By the end of the component pupils will learn how electric currents can also be used to produce electromagnetic waves, which have many uses including the transmission of information and the transfer of energy from one place to another. **TDA:** Investigation TBC **ESA:** Component 6