

Subject: Science

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Year 10 - Academic Year 2010-2011

Contents: what you will study

During Year 10 you will study 12 topics, 4 in Biology, 4 in Chemistry and 4 in Physics. These will be taught in pairs and each pair will be examined externally in the Winter, Spring and Summer terms (2 examinations each term). The topics will rotate throughout the year and you will find that your topics will not match those done by other sets at the same time. It will not be possible to inform you here which topics you will cover in a specific term but a full list of the Year 10 topics is supplied and once your teacher informs you which topic you are studying you will be able to use this booklet to locate what you need to learn.

In Year 10 you will study two from the following areas each term:

Biology topics

Environment (B1a.1) & Genes (B1a.2) – examined together

(B1a.1) is a look at the inter-relationships between animals in habitats, food chains and webs, and the flow of energy through them, variation, evolution and competition. Find out how all life depends on all other living things and ultimately on the sun.

(B1a.2) covers cell division and reproduction, inheritance and genetics and control of reproduction. Do you know how unique you really are - there is not and has never been anyone exactly like you – find out why.

Electrical and chemical signals (B1a.3) & Use misuse and abuse (B1a.4) – examined together

(B1a.3) How do we make our bodies do things? This looks at the nervous system and how nerve impulses are carried by neurones. It also looks at how chemical signals (hormones) are produced and used in the body.

(B1a.4) covers micro-organisms and disease, how our bodies defend themselves and how different drugs can have positive and negative effects on the body.

Chemistry topics

Patterns and properties (C1a.5) & Making changes (C1a.6) – examined together

(C1a.5) examines the development and use of the Periodic Table and reactions and trends of elements in groups in the table. This one object is probably the most useful tool a chemist can have.

(C1a.6) looks at types of reactions: oxidation, reduction, displacement, exothermic and endothermic. It also looks at how we use chemicals and chemical reactions everyday.

There's only one earth (C1a.7) & Designer products (C1a.8) - examined together

(C1a.7) covers how we get energy from reactions, use of fuels and the effect on the environment, the chemistry of petroleum and how we use reactions to obtain the chemicals we need.

(C1a.8) takes us through the way we obtain the materials we need, smart materials which change back to their original shape when heated, nano-technology where we could build computers and machines too small to ever see and how we make materials to do a specific job.

Physics topics

Producing and measuring electricity (P1a.9) & You're in charge (P1a.10) – examined together

(P1a.9) an integral part of science is how we make and use electricity. Here we look at current, voltage and resistance – the basic concepts that make all electrical appliances work.

(P1a.10) making electricity for the nation: how we make and transfer electricity, how we avoid wasting electrical energy in appliances and other ways of making electricity without burning fossil fuels.

Now you see it, now you don't (P1a.11) & Space and its mysteries (P1a.12) – examined together

(P1a.11) What is light? How do mobile phones work? This topic looks at light as an electromagnetic wave and the other types of electromagnetic radiation we use.

(P1a.12) as the title suggests, this is about the universe. Suns, stars, planets, satellites, comets. How do we look at objects in space and how could we get to them.

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National Curriculum levels at which you will work

A copy of the EDEXCEL specification can be found on the internet at:

<http://www.edexcel.org.uk/quals/gcse/science/gcse-sci2006/gcse-sci/> .

Here you will find the Specification as a pdf file. This includes the relevant National Curriculum programme of study. The relevant aspects of the course which are for Higher students only are indicated in the textbook / Active Book. If you cannot access this site at home or in school please ask your teacher for help.

Skills which you will develop this year:

Use of microscopes. Comparing images of types of cells. Performing reactions involving enzymes.

Comparing reactions and properties of elements and compounds. Using the periodic table to predict properties and reactions of elements. Investigating the preparation of metal salts.

Planning, carrying out, analysing, and evaluating experimental work. Assessing the risks involved. Comparing elements in the periodic table. Using word and symbol equations to represent chemical reactions.

Critically evaluating electrical appliances and calculating the cost of using these appliances. Comparing the cost of producing electricity, in environmental terms, with the benefits.

Drawing and making electrical circuits. How to use electricity safely. Calculations involving Current, Potential Difference (Voltage), *Charge*, using graphs to represent current and voltage in different components and power.

Assessment: how you will be tested this year

This is a one year course, leading to a GCSE Core Science qualification at the end of Year 10.

2 x 20 minute Modular Exams (November, March and June) – External: this contributes 20% to your final GCSE Grade in Year 10. (There are 6 Modular exams per year which add up to 60% of the Year 10 GCSE overall)

Practical work will be assessed throughout the course by you teachers and is worth 10% of the GCSE.

In addition there will be between three or more internally assessed tasks where you will be tested on your knowledge of the topics and your ability to explain data.

Together these make up 30% of your GCSE.

End of module test (internal – during lessons)

Homework and practice modular exams.

Equipment which you will need for this years work

Classroom materials – pen, pencil, ruler, calculator, protractor, pie chart circle etc.

You will be supplied with a CD-Rom of the Active Book, take this home and arrange for a copy the disk to be made. You must than return the Active Book disk to your teacher. Text books can be supplied to those who do not have access to a PC at home.

Key words which you will need to learn for this year's work

Key words are explained in the glossary at the back of each chapter of the textbook / Active Book.