



Science KS4

Year 9 & 10 OCR GCSE Science

Course Outline – GCSE Science

Summary of Content: BIOLOGY

Unit B1 – Understanding Organisms

To stay healthy, you need to understand how your body works so you can adopt the behaviours that keep you healthy.

In this module you will learn what you need to eat and how to exercise to stay healthy. You will find out about infectious diseases and how your immune system and medicines can deal with them. You will also find out how your hormones play a key role in your growth and development and in helping your body to function properly.

You will learn how drugs affect your health, and what makes us different to each other.

Unit B2 – Understanding our Environment

There are millions of different organisms on the planet. They all interact with each other and their environment. The best adapted organisms are the ones most likely to survive.

In this module, you will learn about the amazing range of living organisms, and how biologists are able to sort this variety of life into groups. Along with grouping, you will study the ideas of feeding relationships and energy flow through food chains. Death and decay are part of this and so is recycling.

The ways in which different organisms compete with each other for limited resources will be investigated. You will learn about the fantastic ways that plants and animals have become adapted to survive. You'll then learn about how all of this life evolved. Finally, you will examine some of the big issues of the day: the effects of human population, and how we can all live a sustainable life.



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Summary of Content: CHEMISTRY

Unit C1 – Carbon Chemistry

You use many different materials in your everyday life. Many of these chemicals are made from crude oil or depend upon it for their production. Crude oil is vital to modern life, yet the stories of the problems caused when things go wrong are often in the news.

In this module you will investigate how crude oil is changed into useful products like fuel, plastics, cosmetics and paints. You will explore the causes of air pollution and how they may be prevented, and the issues surrounding testing products on animals. Everyone needs to eat, so you will examine the chemical reactions that happen in cooking. You will also find out about food additives and some issues concerned with their use.

Unit C2 – Chemical Resources

Earthquakes and volcanoes are often in the news. Although scientists understand the Earth's structure, it is still not possible to predict exactly when and where these natural events will happen. In this module you will study the theory of plate tectonics and how the earth's surface has changed over time.

The Earth's crust is a source of valuable raw materials including rocks for making concrete and metal ores for making metals. You will investigate how these materials are extracted and used, and the environmental problems this causes. Salt and the air around us are also important sources of useful materials. This includes hydrogen from salt solution and nitrogen from the air. These substances are used to make ammonia, the raw material for fertilizers, dyes and explosives. You will discover how chemists choose the conditions necessary for industrial chemical processes like the Haber Process. You will examine the benefits and risks of using fertilizer.



Summary of Content: PHYSICS

Unit P1 – Energy for the Home

You use energy in your home in many different forms. Energy is used to heat homes and for cooking. You also use energy to communicate using mobile phones, to access the internet, and to watch TV. All of these depend on the transfer of energy from one form to another.

In this module, you will look at the different ways that energy can be transferred by conduction, convection, and radiation, and how these transfers are minimized in homes to save energy. You will learn about how you use microwaves and infrared for cooking, and how the same waves, along with radio waves and light are used for communication.

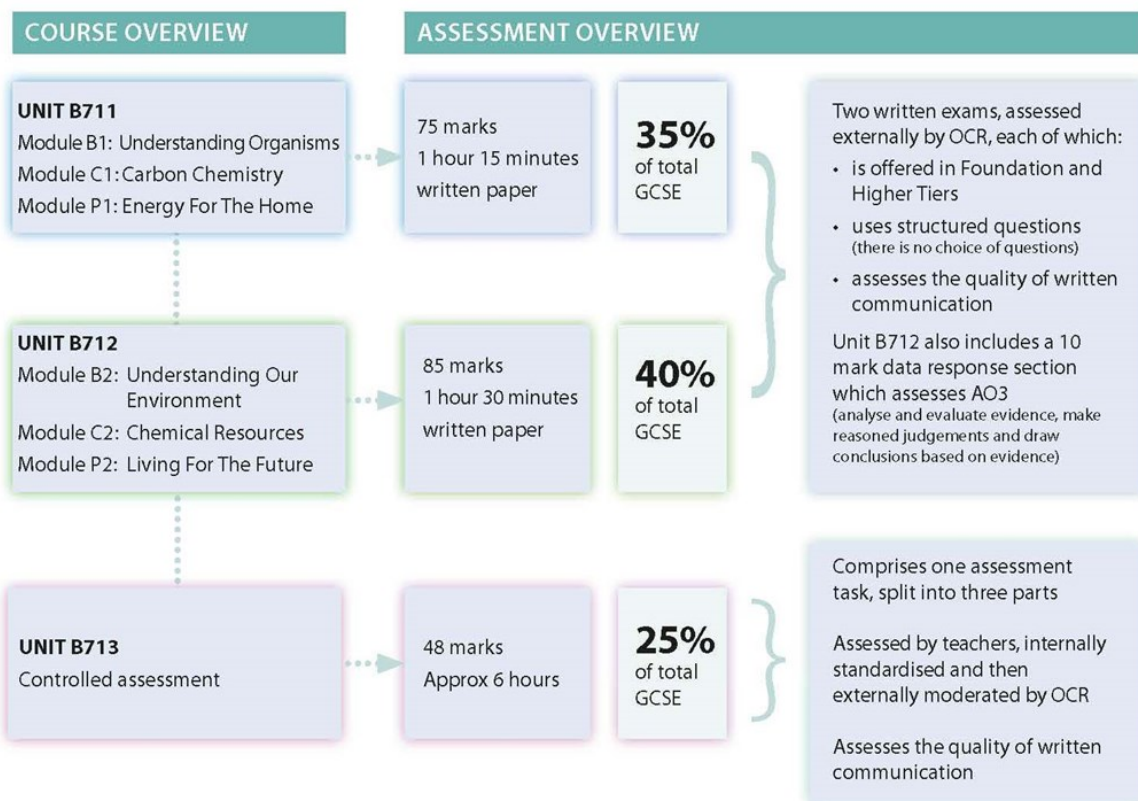
You will also find out how the energy produced by earthquakes is transferred by waves and how ultraviolet radiation can be harmful.

Unit P2 – Living for the Future

Human activity is leading to changes in the climate and we are rapidly using up our natural resources. Scientists are working on solutions to these problems. We consume vast amounts of electricity every day, to power our TVs, mobiles and computers. In the future, how will we generate enough to meet our needs? In this module, you will learn about how electricity is generated, and the advantages and disadvantages of different technologies, from large coal-fired power stations to small solar cells on calculators.

Our planet is in a delicate balance. In this module you will be introduced to the science behind global warming and the impact of humans on the environment. You will learn about the Earth's place in the Universe, where it fits into the solar system, and how humans have explored space, and about the threats posed by asteroid impact. Finally, you will study scientific ideas about the origin of the Universe, how these ideas have changed over time, and how our sun will eventually expand and incinerate the Earth.

Exam Structure



The papers you sit will be decided by your teacher based on your classwork, homework and compulsory assessments throughout the course.

The controlled assessment tasks are set by OCR and marked by your teacher. OCR will then moderate these marks. They will center around a piece of practical work; you will be required to plan an investigation, carry out a practical, and analyse your own, and others', data.

Retakes

There are no longer any resits for individual units in any GCSE course. Students wishing to re-take a GCSE are required to re-take all the units in the qualification and this will have to be done in June of the following year. You will be permitted to carry forward the results from the controlled assessment unit(s) if they wish and only re-take the externally-assessed units.



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Lessons

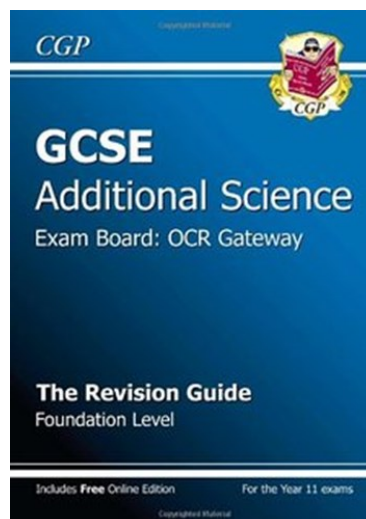
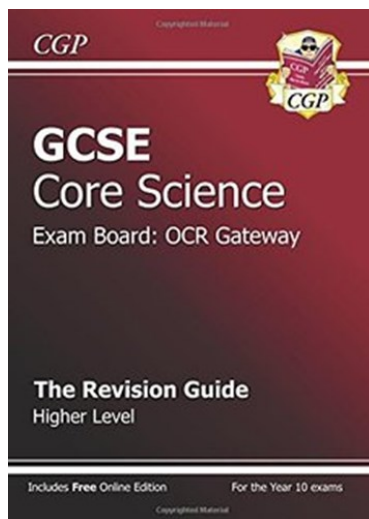
At KS4, you will have up to 6 lessons per fortnight in year 9 which will increase to 11 lessons per fortnight in year 10 & 11 and have two or even three staff members teaching you (each teacher will teach their specialism so you get the best possible support in your learning).

Each unit has at least 6 formal assessments that may be done in class or as part of homework / extended learning tasks. There are also end of topic tests.

The grades from these assessments will inform the grades that you receive on your report.

Book Lists

OCR GCSE Revision guides are available from Springwood High School via the school shop.



OCR Gateway GCSE Science (Modules: B1, B2, C1, C2, P1 & P2)

ISBN 978-0-19-913552-3

OCR Gateway GCSE Additional Science (Modules: B3, B4, C3, C4, P3 & P4)

ISBN 978-0-19-913558-5



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Additional Resources

The science department provides each student with access to an online learning resource. Your username and password will be given to you in class. Make sure that you keep it secure.

The following websites are just a few examples of somewhere you may find helpful with some of the content, as well as interesting things to read and explore:

<http://www.bbc.co.uk/learningzone/clips/topics/secondary.shtml#science>

<http://www.ocr.org.uk/qualifications/gcse-gateway-science-suite-science-b-j261-from-2012/>

<http://www.bbc.co.uk/schools/gcsebitesize/science/videos/>

<http://www.gcse-science.com/index.html>

<http://www.docbrown.info/page20/2edexscience.htm>

<http://www.s-cool.co.uk/gcse>

<http://www.science-active.co.uk/>

https://www.o2learn.co.uk/o2_students.php

<https://www.khanacademy.org/>

http://www.absorblearning.com/en/Free_online_Absorb_resources/

http://www.kscience.co.uk/animations/anim_1.htm

<http://revisionworld.co.uk/gcse-revision>

<http://www.eduvee.com/science-revision/join?gclid=COCE6rGO2bUCFfLLtAoduzUAqQ>

<http://www.reading.ac.uk/scienceoutreach/default.asp?id=1&ver=1&swp=0&stp=0&cc=true>