

# Science KS3 Course Overview

Years 7-9, 2010-2011

## Introduction

This document sets out the science curriculum for Years 7 to 9 at ICHK. Its main aims are to establish a clear vision for teaching and learning and to translate this vision into a framework for everyday use.

## General Vision

In keeping with the [ICHK vision statement](#), it is hoped that learning and undertaking activities in science contribute to achievement of the curriculum aims for all young people to:

- Be challenged to learn at a **high** but **appropriate** level;
- Work **collaboratively** in a spirit of **sharing** and **inclusion**;
- Solve problems with **creativity**, **innovation** and **critical analysis**;
- Be encouraged act with **respect** and **integrity** whilst considering issues from personal, local and global perspectives;
- Be **successful** learners who enjoy learning, make progress and achieve confident individuals who are able to live safe, healthy and fulfilling lives **responsible** citizens who make a positive contribution to society.
- Be asked to take **responsibility** for their own learning.

## Science Vision

Every student will be given an equal opportunity to achieve success and to improve and develop their understanding of the world through the scientific perspective:

- All students will be offered differentiated learning using the latest innovative and creative learning strategies based on current educational research.
- All students will be provided with a diverse learning experience via an enquiry-based learning approach.
- All students will be required to develop critical thinking skills
- Science involves practical and experiential learning opportunities and focus on international issues.

## Structure

There are a number of key concepts that underpin the study of science and how science works. Students need to understand these concepts in order to deepen and broaden their knowledge, skills and understanding.

### The Framework for secondary science:

Year 7-9 must cover the following strands and specific substrands and sub-substrands with an increasing progression of difficulty in line with the Levels 4-7 descriptors as set out in the National Curriculum documentation. An example is provided for Strand 1.

#### Strands:

##### **1 How science works**

#### Sub-strands:

- 1.1a Explanations, argument and decisions
- 2 Practical and enquiry skills

#### Sub-substrands:

- 1.1a1 Scientific thinking: developing explanations using ideas and models
- 1.1.2a Using investigative approaches: planning an approach

## 1.1a1 Scientific thinking: developing explanations using ideas and models

Year 7	Year 8	Year 9
<ul style="list-style-type: none"> <li>● use an existing model or analogy to explain a phenomenon</li> </ul>	<ul style="list-style-type: none"> <li>● describe more than one model to explain the same phenomenon and discuss the strengths and weaknesses of each model</li> </ul>	<ul style="list-style-type: none"> <li>● describe the strengths and weaknesses of a range of available models and select the most appropriate</li> </ul>
<ul style="list-style-type: none"> <li>● recognise and explain the value of using models and analogies to clarify explanations</li> </ul>	<ul style="list-style-type: none"> <li>● describe how the use of a particular model or analogy supports an explanation</li> </ul>	<ul style="list-style-type: none"> <li>● explain why the manipulation of a model or analogy might be needed to clarify an explanation</li> </ul>

## 1.1.2a Using investigative approaches: planning an approach

Year 7	Year 8	Year 9
<ul style="list-style-type: none"> <li>● describe an appropriate approach to answer a scientific question using a limited range of information and making relevant observations or measurements</li> </ul>	<ul style="list-style-type: none"> <li>● describe an appropriate approach to answer a scientific question using sources of evidence and, where appropriate, making relevant observations or measurements using appropriate apparatus</li> </ul>	<ul style="list-style-type: none"> <li>● explain how the planned approach to answer a scientific question was informed by scientific knowledge, understanding or other sources of evidence</li> </ul>

**2 Organisms, behaviour and health**

- 2.1 Life processes
- 2.2 Variation and interdependence
- 2.3 Behaviour

**3 Chemical and material behaviour**

- 3.1 Particle models
- 3.2 Chemical reactions
- 3.3 Patterns in chemical reactions

**4 Energy, electricity and forces**

- 4.1 Energy transfer and electricity
- 4.2 Forces

**5 The environment, Earth and the universe**

- 5.1 Changing environment and sustainability
- 5.2 Changing Earth
- 5.3 Earth, Space and beyond

## Assessments

Each Year group will complete Units from their textbook that cover the strands and assessments designed to fulfill requirements of the [The Framework for secondary science: overview and learning objectives](#). This will be used in conjunction with the ICHK assessment scale and Nation Curriculum statements (refer to previous rubric on p2). All assessments will be differentiated to enable students that require support to achieve realistic improvement and to extend gifted and talented students with challenging, problem solving experiences.

Formative assessments will take place throughout each unit and will take many forms (discussions, written work, student reflections, practical tasks, projects, experiments, research assignments). Various Units will culminate in summative assessments which will aim to provide a summary of content taught through the Units and several common detailed formative assessments will ensure a holistic perspective of the students level of achievement at the end of each Term. There will be approximately 2-3 summative assessments per term plus an additional End of Term Test.

A final level of achievement will be reported on the basis of all the evidence collected throughout the year - that is consistent with the level of achievement as demonstrated by the reference samples provided by the UK National Curriculum Framework for Assessing Pupil's Progress (APP) Standards File at Key Stage 3 (KS3).

Formative assessments cover most of the strands and therefore produce a true reflection of the levels achieved by students at KS3. Some substrands will be completed by summative assessments. The exposure to the nature of test formats provides experience for students in preparation for IGCSE in the next stage of their development.

## Differentiation

Throughout the Science course in Years 7-9, students will be supported to ensure the curriculum is accessible to all students, whilst providing appropriate challenge. Some of the ways in which this will be achieved are:

### Resources:

Students will be exposed to different ICT opportunities of differing complexity for students who may be working at different levels, e.g. Videos, Interactive multimedia software, use of Microsoft powerpoint, word and excel software

Students will be exposed to Bloom's Taxonomy of Learning, Cooperative Learning Strategies and de Bono's Six Thinking Hats, Lateral thinking, Dr Kaplan's Icon Prompts, Critical thinking and Socratic questioning.

### Support:

Individual students may receive additional teaching assistance as specified in their IEP. Students will also be supported by the class teacher; through varied activities or expected outcomes; through more detailed explanations or support during a task; or by varying the physical requirements or presentation aspects of a task (e.g. other than written information).

Areas more specifically that may need to be noted in relation to work within the Science curriculum include difficulties related to; audio or visual impairment as well as gross and fine-motor skills, all of which will be assessed and planned for, as and when necessary.

After school tuition, opportunities for help during Break 1 and Break 2 and email of Q & A after hours can be arranged with teachers.

**Outcomes:**

It is envisaged that students will work within or above the level expected as per the ICHK assessment scale, unless stated in their IEP. All activities set will enable students to work within or beyond the level expected for their year group whilst a focus of enquiry learning will enable many students to develop their ideas and projects. However, some activities will need to be adjusted to ensure they are accessible to those students who are not working at the expected level for their year group. Each activity will be individually assessed for its suitability for the students within the class and adjusted accordingly.

**Main Resource Requirements**

Science textbooks follow the Nelson Thornes Scientifica Series used in UK schools and conforming to the National Key Stage 3 Standards.

All students will be provided with a companion workbook that allows further differentiated assessment.

A scientific calculator plus graphing and stationary equipment.

**Links to Relevant Syllabus and Curriculum Documents**

[www.curriculum.qcda.gov.uk/key-stages-3-and-4](http://www.curriculum.qcda.gov.uk/key-stages-3-and-4)

[www.curriculum.qcda.gov.uk/key-stages-3/science/index.aspx](http://www.curriculum.qcda.gov.uk/key-stages-3/science/index.aspx)

**ICHK Teaching & Learning & ICHK Student Documents**

Please refer to the following documents for related information:

- [ICHK Curriculum document for Years 7-9](#)
- ICHK Teacher document
- [ICHK Assessment Scale](#)
- ICHK Academic Honesty Policy

**Calendar**

Term 1	Term 2	Term 3
<p><b>All sciences start with Safety in Science</b></p> <p><b>Yr 7 Topics:</b></p> <ul style="list-style-type: none"> <li>- Solutions</li> <li>- Acids &amp; Alkalis</li> </ul> <p>- Laboratory report assessments</p> <p>- Practical Test</p> <p><b>Yr 8 Topics:</b></p> <ul style="list-style-type: none"> <li>- Food &amp; Digestion</li> <li>- Microbes &amp; Diseases</li> </ul> <p>- Laboratory report assessments</p> <p>- Practical Test</p> <p><b>Yr 9 Topics:</b></p> <ul style="list-style-type: none"> <li>- Fit &amp; Healthy</li> <li>- Gravity &amp; Space</li> </ul> <p>- Laboratory report assessments</p> <p>- Practical Test</p>	<p><b>Yr 7 Topics:</b></p> <ul style="list-style-type: none"> <li>- The Particle Model</li> <li>- Simple chemical reactions</li> </ul> <p><b>Yr 8 Topics:</b></p> <ul style="list-style-type: none"> <li>- Respiration</li> <li>- Ecological relationships</li> </ul> <p><b>Yr 9 Topics:</b></p> <ul style="list-style-type: none"> <li>- Inheritance &amp; Variation</li> <li>- Reactions of metals &amp; compounds</li> <li>- Patterns of Reactivity</li> </ul>	<p><b>Yr 7 Topics:</b></p> <ul style="list-style-type: none"> <li>- Forces and their effects</li> </ul> <p><b>Yr 8 Topics:</b></p> <ul style="list-style-type: none"> <li>- Heating &amp; Cooling</li> <li>- Magnets &amp; Electromagnets</li> </ul> <p><b>Yr 9 Topics:</b></p> <ul style="list-style-type: none"> <li>- Energy &amp; Electricity</li> <li>- Speeding up</li> </ul>
	<p>CNY Holiday</p>	<p><b>Yr 7 Topics:</b></p> <ul style="list-style-type: none"> <li>- The Solar System</li> </ul> <p><b>Yr 8 Topics:</b></p> <ul style="list-style-type: none"> <li>- Rocks &amp; Weathering</li> <li>- The Rock Cycle</li> </ul> <p><b>Yr 9 Topics:</b></p> <ul style="list-style-type: none"> <li>- Plants for Food</li> <li>- Pressure &amp; moments</li> </ul> <p><b>Yr 7-9</b></p> <p>EoT 3 Assessments</p> <p>Year 7 Science Projects (Expos &amp; ...)</p>
<p>Mid Term Break</p>		

Term 1	Term 2	Term 3
<p><b>Yr 7 Topics:</b> - Cells (continue after CAS Week)</p> <p><b>Yr 8 Topics:</b> - Light (continue until EoT1)</p> <p><b>Yr 9 Topics:</b> - Using Chemistry (continue until EoT1)</p>	<p><b>Yr 7 Topics:</b> - Energy - Electrical circuits - Laboratory report assessments - Practical Test</p> <p><b>Yr 8 Topics:</b> - Elements &amp; Atoms - Compounds &amp; Mixtures - Laboratory report assessments - Practical Test</p> <p><b>Yr 9 Topics:</b> - Plants &amp; Photosynthesis - Environmental Chemistry - Laboratory report assessments - Practical Test</p>	<p><b>Year 7 Science Projects (Plants &amp; The Solar System)</b> Rubric assessment</p> <p>- <b>Year 8 Multiple choice Qs</b> 25 MCQs + 25 short answers Total of 50 marks</p> <p>- <b>Year 9 End of Year Test</b> MCQ section (20 marks) Short Answer section with Graphing Question and Calculations (30 marks) Total of 50 marks</p>
CAS Week		
<p><b>Year 7 Topics:</b> - Reproduction - Variation &amp; Classification</p> <p><b>Yr 7-9</b> End of Term 1 Tests (EoT) All Tests consist of: MCQ section (20 marks) Short Answer section with Graphing Question and Calculations (30 marks) Total of 50 marks</p>	<p><b>Yr 7-9</b> EoT 2 Tests All Tests consist of: MCQ section (20 marks) Short Answer section with Graphing Question and Calculations (30 marks) Total of 50 marks</p>	Summer Break
	Easter Holidays	
Christmas Holidays		

## Reflections/Points to Note from 2010/11

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Created By/Date	Reviewed	Signed
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