

## YEAR 7-10 SECONDARY CURRICULUM OVERVIEW

### SUBJECT: SCIENCE/ BIOLOGY

#### PURPOSE OF STUDY

The principal focus of science teaching in key stage 3 is to **develop a deeper understanding of a range of scientific ideas in the subject disciplines of biology, chemistry and physics**. Pupils should begin to see the connections between these subject areas and become aware of some of the big ideas underpinning scientific knowledge and understanding. They should be encouraged to relate scientific explanations to phenomena in the world around them and start to use modelling and abstract ideas to develop and evaluate explanations.

Pupils should understand that science is about working objectively, modifying explanations to take account of new evidence and ideas and subjecting results to peer review. Pupils should decide on the appropriate type of scientific enquiry to undertake to answer their own questions and develop a deeper understanding of factors to be taken into account when collecting, recording and processing data. They should evaluate their results and identify further questions arising from them.

'Working scientifically' is described separately at the beginning of the programme of study but must always be taught through and clearly related to substantive science content in the programme of study. Teachers should feel free to choose examples that serve a variety of purposes, from showing how scientific ideas have developed historically to reflecting modern developments in science. Pupils should develop their use of scientific vocabulary, including the use of scientific nomenclature and units and mathematical representations.

#### AIMS

The national curriculum for science aims to ensure that all pupils:

- ✓ develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- ✓ develop understanding of the **nature, processes and methods of science** through different types of science enquiries that help them to answer scientific questions about the world around them
- ✓ are equipped with the scientific knowledge required to understand the **uses and implications** of science, today and for the future.

YEAR 7 Summer Term: 5 <sup>th</sup> April to 4 <sup>th</sup> June 2020	
<b>7D Ecosystems:</b>	<b>1. Variations</b>  <b>2. Adaptations</b>
<b>7H Atoms, elements and molecules:</b>	<b>1. The air we breathe</b>  <b>2. Earth's elements</b>

**Revision of all First and Second Term topics**

**7A Cells, tissues, organs and systems**  
(includes 7Aa to 7Ae)

**7Ba Escaped zoo animals**  
**7Ba The scientific method (WS)**

**7E Mixtures and separation**  
(includes 7Ea to 7Ee)

**7F Acids and alkalis**  
(includes 7Fa to 7Fe)

**7J Electricity**  
(includes 7Ja to 7Je)

**7C Muscles and bones**  
(includes 7Ca to 7Ce)

**7G The particle model**  
(includes 7Ga to 7Ge)

**7I Energy**  
(includes 7Ia to 7Ie)

***Recommended sites***

<https://www.pearsonactivelearn.com/app/library/series/view/714938?foc=true#/teacherbooks>

**YEAR 8 Summer Term: 5<sup>th</sup> April to 4<sup>th</sup> June 2020**

**Revision of all topics from exploring and GL PTS syllabus**

**8A Food and Nutrition  
(includes 8Aa to 8Ae)**

***Link to IGCSE:***  
Topic 2 (c) 2.7-2.10, (d) 2.15-2.16, (e) 2.24-2.33B

**8B Plants and their  
reproduction  
(includes 8Ba to 8Be)**

***Link to GL PTS:***  
Structure and function of living organisms,  
Material cycles and energy,  
Interactions and interdependencies

***Link to IGCSE:***  
Topic 2 (e) 2.18-2.23  
Topic 3 3.1-3.7

**8C Breathing and  
Respiration  
(includes 8Ca to 8Ce)**

***Link to GL PTS:***  
Structure and function of living organisms

***Link to IGCSE:***  
Topic 2 (f) 2.34-2.38, (g) 2.40B-2.50

<p><b>8D Unicellular Organisms (includes 8Da to 8De)</b></p>	<p><b><i>Link to GL PTS:</i></b> Interactions and interdependencies Genetics and Evolution</p> <p><b><i>Link to IGCSE:</i></b> Topic 1 (b) 1.2-1.4</p> <p><b><i>Link to GL PTS:</i></b> Interactions and interdependencies Genetics and Evolution</p> <p><b>Revision of all GL PTS objectives and practice assessments.</b></p>
<p><b><i>Recommended sites</i></b></p>	<p><a href="https://www.gl-assessment.co.uk/media/1349/pte13-links-to-national-curricula_0.pdf">https://www.gl-assessment.co.uk/media/1349/pte13-links-to-national-curricula_0.pdf</a></p> <p><a href="https://qualifications.pearson.com/content/dam/pdf/International%20GCSE/Biology/2017/specification-and-sample-assessments/international-gcse-Biology-2017-specification1.pdf">https://qualifications.pearson.com/content/dam/pdf/International%20GCSE/Biology/2017/specification-and-sample-assessments/international-gcse-Biology-2017-specification1.pdf</a></p>

**YEAR 9 Summer Term: 5<sup>th</sup> April to 4<sup>th</sup> June 2020**

**Revision of all GL PTS objectives and practice assessments.**

**Preparation for PISA 2021**

**(Moving students from level 3 to level 4)**

**‘At Level 4, students can use more complex or more abstract content knowledge, which is either provided or recalled, to construct explanations of more complex or less familiar events and processes. They can conduct experiments involving two or more independent variables in a constrained context. They are able to justify an experimental design, drawing on elements of procedural and epistemic knowledge. Level 4 students can interpret data drawn from a moderately complex data set or less familiar context, draw appropriate conclusions that go beyond the data and provide justifications for their choices’.**

***Practicing questions related to PISA framework, that is, scientific processes, scientific concepts, situations and newly added creative thinking.***

**9A Genetics and Evolution  
(includes 9Aa to 9Ae)**

***Link to GL PTS:***  
Genetics and evolution

***Link to IGCSE:***  
Topic 3 (b) 3.14-3.17B, 3.19, 3.28-3.30

<b>9B Plant Growth (includes 9Ba to 9Be)</b>	<p><b><i>Link to GL PTS:</i></b> Interactions and interdependencies</p> <p><b><i>Link to IGCSE:</i></b> Topic 2 (e) 2.18-2.22, (h) 2.51-2.57B, (i) 2.70</p>
<b>9C Biology revision and projects (includes 9Ca to 9C3)</b>	<p><b><i>Link to GL PTS:</i></b> Interactions and interdependencies. Material cycles and energy. Structure and function of living organisms.</p>
<b>9D Biology transition to GCSE (includes 9Da to 9De)</b>	<p><b><i>Link to GL PTS:</i></b> Interactions and interdependencies. Material cycles and energy.</p>
<b><i>Recommended sites</i></b>	<p><a href="http://www.oecd.org/pisa/test/PISA2015-Released-FT-Cognitive-Items.pdf">http://www.oecd.org/pisa/test/PISA2015-Released-FT-Cognitive-Items.pdf</a>  <a href="http://www.oecd.org/pisa/test/">http://www.oecd.org/pisa/test/</a>  <a href="https://www.moe.gov.ae/En/ImportantLinks/InternationalAssessments/Documents/PISA/Scienes%20Literacy%20Training%20Package.pdf">https://www.moe.gov.ae/En/ImportantLinks/InternationalAssessments/Documents/PISA/Scienes%20Literacy%20Training%20Package.pdf</a>  <a href="https://www.gl-assessment.co.uk/media/294659/pts14-links-to-national-">https://www.gl-assessment.co.uk/media/294659/pts14-links-to-national-</a></p>

[curricula.pdf](#)

<https://qualifications.pearson.com/content/dam/pdf/International%20GCSE/Biology/2017/specification-and-sample-assessments/international-gcse-Biology-2017-specification1.pdf>

**YEAR 10 Summer Term: 5<sup>th</sup> April to 4<sup>th</sup> June 2020**

**Revision of all GL PTS objectives and practice assessments.**

**Preparation for PBTS**

**(Moving students from level 3 to level 4)**

**'At Level 4, students can use more complex or more abstract content knowledge, which is either provided or recalled, to construct explanations of more complex or less familiar events and processes. They can conduct experiments involving two or more independent variables in a constrained context. They are able to justify an experimental design, drawing on elements of procedural and epistemic knowledge. Level 4 students can interpret data drawn from a moderately complex data set or less familiar context, draw appropriate conclusions that go beyond the data and provide justifications for their choices'.**

*Practicing questions related to PISA framework, that is, scientific processes, scientific concepts, situations and newly added creative thinking.*

**Topic 2 (e) Nutrition**  
2.18-2.33B

**Topic 2 (f) Respiration**  
**(g) Gas exchange**  
2.34-2.50

**Topic 2 (h) Transport**  
2.51-2.69

**Topic 4 (d) Human influences on the environment**  
4.12-4.18B

**Topic 2 (i) Excretion**  
2.70-2.79B

**Topic 2 (j) Coordination and response**  
2.80-2.93

**Topic 4 (a) The organism in  
the environment  
(b) Feeding relationships  
(c) Cycles within ecosystems**

4.1-4.11B