

## Scheme of work for Chapter 5, *Ecology and evolution*

Syllabus section	Content	Time required	Outline of lesson content	Coursebook resources	Worksheets	Teacher's resources / Teaching ideas
5.1	Communities and ecosystems	4 lessons	<ul style="list-style-type: none"> <li>Review the definitions used in ecology; draw and describe a food chain and extend the concept to a food web of 10 organisms using common species names</li> <li>Define 'trophic level' and identify the trophic level of organisms in food chains and webs</li> <li>Explain how energy flows through a food web and that energy transformation is not 100% efficient; explain the shape of an energy pyramid</li> <li>Contrast the flow of energy with the cycling of nutrients and outline the importance of saprotrophic bacteria and fungi in nutrient cycles</li> </ul>	<p>p100–105</p> <p>Short-answer Qs p102, p105</p> <p>End-of-chapter Qs p126–129: Q1, Q5</p>	<p>Extension: Q1</p> <p>Support: Q1</p>	<p>Practical activity: field work in local habitats</p> <p>Link to Chapter 1 and Option G</p> <p>Exemplar exam question</p>
5.2	The greenhouse effect	3 lessons	<ul style="list-style-type: none"> <li>Draw and understand the carbon cycle and how human action affects it; analyse graphs that show the change in atmospheric CO<sub>2</sub> over time</li> <li>Explain the relationships between greenhouse gases, transmission of short- and longer-wave radiation and the temperature of the atmosphere; outline the precautionary principle and why it may be a justification for intervention in respect of the enhanced greenhouse effect</li> <li>Consider the consequences of a rise in global temperatures, in particular in the arctic ecosystems</li> </ul>	<p>p105–111</p> <p>TOK p109</p> <p>Short-answer Qs p111</p> <p>End-of-chapter Qs p126–129: Q2, Q8, Q9, Q10</p>	<p>Extension: Q2, Q4</p> <p>Support: Q2</p>	<p>Link to TOK: precautionary principle</p> <p>Link to Aspects of internationalism</p>
5.3	Populations	1 lesson	<ul style="list-style-type: none"> <li>Outline how population size is affected by birth, death, immigration and emigration and draw a sigmoid growth curve; explain the reasons for the shape of the curve and list three factors that limit population growth</li> </ul>	<p>p111–113</p> <p>Short-answer Qs p113</p> <p>End-of-chapter Qs p126–129: Q7</p>	<p>Extension: Q5</p>	<p>Link to ICT: yeast population practical</p>

5.4	Evolution	3 lessons	<ul style="list-style-type: none"> <li>Define 'evolution' and consider the evidence for it from the fossil record, selective breeding and homologous structures</li> <li>Explain the four principles that lead to the theory of evolution by natural selection</li> <li>Explain antibiotic resistance in bacteria and one other example of evolution in response to environmental change</li> </ul>	p113–119 Short-answer Qs p119 End-of-chapter Qs p126–129: Q6, Q8	Extension: Q3 Support: Q3	
5.5	Classification	3 lessons	<ul style="list-style-type: none"> <li>Outline the binomial system of nomenclature and list the seven levels in the hierarchy</li> <li>Distinguish between the four main phyla of plants and six phyla of animals using external features</li> <li>Design a key for a group of eight organisms from collected specimens or photographs</li> </ul>	p119–125 Short-answer Qs p123, p124 End-of-chapter Qs p126–129: Q2, Q3, Q4	Support: Q4, Q5	

**Note:** 1 lesson = approximately 40 minutes