

# BIOLOGY TERM BY TERM CURRICULUM

[Specification link - AQA 7402 A Level Biology](#)



January 2023

YEAR 12

TERM	Teacher 1 (1 x triple lesson – 105 minutes & 1 x double – 70 minutes)	Teacher 2 (2 x doubles - 70 minutes each)
1	<p><b>3.1 Biological molecules part 1</b></p> <ul style="list-style-type: none"> <li>• 3.1.2 – structure and properties of carbohydrates</li> <li>• 3.1.3 – structure and properties and lipids</li> <li>• 3.1.5 – structure and function of nucleic acids</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, end of topic test and feedback – carbohydrates, lipids and proteins</li> <li>• Exam question practice – Nucleic acids</li> </ul>	<p><b>3.1 Biological molecules part 2</b></p> <ul style="list-style-type: none"> <li>• 3.1.1 – monomers and polymers</li> <li>• 3.1.4 – structure and function of proteins</li> <li>• 3.1.6 – structure and properties of ATP</li> <li>• 3.1.7 – structure and properties of water</li> <li>• 3.1.8 – uses of inorganic ions</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice</li> <li>• Required practical 1 – enzyme action</li> <li>• End of topic test and feedback – ATP, water, ions and nucleic acids</li> </ul>
2	<p><b>3.2 Cells part 1</b></p> <ul style="list-style-type: none"> <li>• 3.2.1.1 – 3.2.1.2 – structure of eukaryotic cells, structure of prokaryotic cells and viruses</li> <li>• 3.2.3 – transport across the cell membrane (diffusion, osmosis, active transport and co-transport)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, end of topic test and feedback – cells and transport</li> <li>• Required practical 3 – factors affecting osmosis in potato cells</li> <li>• Introduction to the synoptic essay (25 marks) for paper 3</li> </ul>	<p><b>3.2 Cells part 2</b></p> <ul style="list-style-type: none"> <li>• 3.2.1.3 Methods of studying cells</li> <li>• 3.2.2 – All cells arise from other cells (including mitosis, microscopy and magnification)</li> <li>• Numerous microscopy practicals</li> <li>• Required practical 2 – observing mitosis in onion cells</li> <li>• Exam question practice, end of topic test and feedback – Microscopy and mitosis</li> <li>• Introduction to the synoptic essay (25 marks) for paper 3</li> <li>• Required practical 4 – factors affecting diffusion in beetroot cells</li> </ul>

3	<p><b>3.2 Cells part 3</b></p> <ul style="list-style-type: none"> <li>• 3.2.4 – cell recognition and immunity (includes the human immune response and vaccination)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, end of topic test and feedback – immunity</li> </ul>	<p><b>3.4 Genetic information, variation and relationships between organisms part 1</b></p> <ul style="list-style-type: none"> <li>• 3.4.1 – DNA, genes and chromosomes</li> <li>• 3.4.2 – protein synthesis (transcription and translation)</li> <li>• 3.4.3 – genetic diversity causes (includes mutation and meiosis)</li> <li>• 3.4.4 – genetic diversity and adaptations</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, end of topic test and feedback – Protein synthesis and genetic diversity</li> </ul>
4	<p><b>3.3 Organisms exchange substances with their environment part 1</b></p> <ul style="list-style-type: none"> <li>• 3.3.1 – surface area to volume ratio</li> <li>• 3.3.2 – gas exchange excluding plants (includes lung structure and function, gas exchange in insects, lung dissection, fish gills)</li> <li>• 3.3.3 – digestion and absorption</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, mini test and feedback – exchange in animals</li> </ul>	<p><b>3.4 Genetic information, variation and relationships between organisms part 2</b></p> <ul style="list-style-type: none"> <li>• 3.4.5 – species and taxonomy</li> <li>• 3.4.6 – biodiversity in a community</li> <li>• 3.4.7 – investigating diversity (transects, ecology, standard deviation and field work)</li> <li>• Statistical tests (maths skills) – chi-squared test, t-test and correlation coefficient</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, assessment and feedback – species diversity and classification</li> </ul>
5	<p><b>3.3 Organisms exchange substances with their environment part 2</b></p> <ul style="list-style-type: none"> <li>• 3.3.4 – mass transport excluding plants (includes structure and function of haemoglobin, the mammalian circulatory system)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, end of topic test and feedback – exchange in animals</li> <li>• Required practical 5 – dissection of a mass transport system (mammalian heart)</li> <li>• Synoptic essay</li> <li>• Exam technique</li> <li>• Mock exams week 1</li> </ul>	<p><b>3.3 Organisms exchange substances with their environment</b></p> <ul style="list-style-type: none"> <li>• 3.3.2 – gas exchange in plants (leaf structure)</li> <li>• 3.3.4 – mass transport in plants (transpiration and translocation)</li> </ul> <p><b>A2 content</b></p> <p><b>3.7 Genetics, populations, evolution and ecosystems</b></p> <ul style="list-style-type: none"> <li>• 3.7.4 – populations in ecosystems (includes competition, predator prey relationships, succession and conservation techniques)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Synoptic essay</li> <li>• Exam technique</li> <li>• Mock exams week 1</li> </ul>

6	<ul style="list-style-type: none"> <li>• Mocks week 2 and feedback</li> <li>• 3-day non-residential field trip</li> <li>• Required practical 12 – environmental factors affecting distribution of a species</li> <li>• Statistical tests</li> </ul> <p>A2 content</p> <p>3.5 Energy transfers in and between organisms (A-level only)</p> <ul style="list-style-type: none"> <li>• 3.5.1 Photosynthesis (A-level only)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, end of topic test - photosynthesis</li> </ul>	<ul style="list-style-type: none"> <li>• Mocks week 2 and feedback</li> <li>• 3-day non-residential field trip</li> <li>• Required practical 12 – environmental factors affecting distribution of a species</li> <li>• Statistical tests</li> <li>• Required practical 6 and practical exam technique</li> <li>• Required practical 7 and practical exam technique</li> </ul>
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## YEAR 13

TERM	Teacher 1 (1 x triple lesson – 105 minutes & 1 x double – 70 minutes)	Teacher 2 (2 x doubles - 70 minutes each)
1	<p>Required practicals 8, 10 and 11</p> <p>Includes exam technique, feedback and assessment on practical techniques questions</p> <p>3.6 Organisms respond to changes in their internal and external environment part 1</p> <ul style="list-style-type: none"> <li>• 3.6.1 – stimuli, both internal and external are detected and lead to a response (includes receptor, reflexes, means by which organisms ensure their survival)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice,</li> </ul>	<p>Required practical 9</p> <p>Includes exam technique questions and feedback on the practical</p> <p>3.5 Energy transfers in and between organisms part 1</p> <ul style="list-style-type: none"> <li>• 3.5.2 – respiration (the biochemistry behind the reaction involved in aer-obic and anaerobic respiration)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, end of topic test and feedback – photosynthesis</li> <li>• Exam question practice, end of topic test and feedback – respiration</li> </ul> <p>3.5 Energy transfers in and between organisms</p> <ul style="list-style-type: none"> <li>• 3.5.3 – energy and ecosystems (includes food webs, trophic levels and energy transfer, productivity of crops and livestock)</li> </ul>

<p>2</p>	<p><b>3.6 Organisms respond to changes in their internal and external environment</b></p> <ul style="list-style-type: none"> <li>• 3.6.2 – nervous control (includes the structure and function of nerves, structure and function of a synapse)</li> <li>• 3.6.3 – skeletal muscle (includes the structure and function of skeletal muscle and muscle contraction)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• End of topic test and feedback – nerves and stimuli (including synoptic essay)</li> <li>• Exam question practice, end of topic test and feedback – skeletal muscle after Christmas</li> </ul>	<p><b>3.5 Energy transfers in and between organisms</b></p> <ul style="list-style-type: none"> <li>• 3.5.4 – nutrient cycles (includes nitrogen cycle, phosphorous cycle and the use of fertilisers)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, end of topic test and feedback- energy and ecosystems</li> </ul> <p><b>3.6 Organisms respond to changes in their internal and external environment</b></p> <ul style="list-style-type: none"> <li>• 3.6.4 – homeostasis (includes the regulation of blood glucose, osmoregulation – water levels and diabetes)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, end of topic test and feedback – homeostasis Kidney dissection</li> </ul>
<p>3</p>	<p><b>3.7 Genetics, populations, evolution and ecosystems part 2 (part 1 in year 12)</b></p> <ul style="list-style-type: none"> <li>• Hardy Weinberg Equation</li> <li>• Revision</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Mock exams</li> </ul>	<p><b>3.7 Genetics, populations, evolution and ecosystems part 2 (part 1 in year 12)</b></p> <ul style="list-style-type: none"> <li>• 3.7.1 – inheritance (includes genetic crosses and the different ways that characteristics can be inherited)</li> </ul> <ul style="list-style-type: none"> <li>• Exam technique</li> <li>• Mock exams</li> </ul>
<p>4</p>	<p><b>3.7 Genetics, populations, evolution and ecosystems part 3</b></p> <ul style="list-style-type: none"> <li>• 3.7.2 – populations (variation in organisms)</li> <li>• 3.7.3 – evolution (includes natural selection and speciation – the rise of new species)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice</li> <li>• Required practical catch up</li> <li>• Feedback from mocks</li> <li>• Synoptic essay practice</li> </ul>	<p><b>3.8 Control of gene expression</b></p> <ul style="list-style-type: none"> <li>• 3.8.1 – alteration of base sequences (includes mutations)</li> <li>• 3.8.2 – gene expression is controlled by a number of features (includes stem cells, regulation of transcription – protein synthesis, tumour suppressor genes and epigenetics)</li> <li>• 3.8.3 – using genome projects (the human genome project – research based)</li> <li>• 3.8.4 – gene technology (includes cloning, genetic fingerprinting and genetic diagnoses of diseases)</li> </ul> <p>Including:</p> <ul style="list-style-type: none"> <li>• Exam question practice, end of topic test and feedback – control of gene expression</li> <li>• Feedback from mocks</li> <li>• Synoptic essay practice</li> </ul>

5	<ul style="list-style-type: none"><li>• Biology mock exam (extra)</li><li>• Required practical catch up</li><li>• Revision</li></ul>	<ul style="list-style-type: none"><li>• Biology mock exam (extra)</li><li>• Required practical catch up</li><li>• Revision</li></ul>
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