



Year 11 GCSE Biology (Separate Science) Curriculum map

Exam Board AQA

Topic	Key Knowledge <i>What will all students KNOW by the end of the topic?</i>	Key Skills <i>What key skills will be learnt/developed by the end of the topic? What will all students be able to DO by the end of the topic?</i>	Assessment Opportunities <i>What are the key pieces of assessment? How will students be assessed?</i>
Homeostasis topic continued (with time in-between for revision of paper 1 content and mock fortnight)	<ul style="list-style-type: none"> - Homeostasis - Structure, function and adaptations of the nervous system - Role of chemicals at the synapse - What is involved in a reflex action and its role - Identify specific areas of the brain and their functions - Be familiar with the benefits and risk of procedures on the brain - Relate the structures of the eye to their functions - Describe how the eye focuses - Be familiar with common defects of the eye - How body temperature is monitored and controlled - The role of the endocrine system and hormones - How blood glucose is controlled - Roles of insulin and glucagon - Causes, effects and treatments of type 1 and 2 diabetes - The importance of maintaining the water and nitrogen balance in the body - Structure and function of the kidneys - Role and effect of ADH on the kidneys - Treatments for kidney failure - The role of hormones in human reproduction - Know a variety of contraception methods – hormonal and non-hormonal 	<ul style="list-style-type: none"> -Build on experimental skills with Required Practical 6 (the effect of a factor on human reaction time) -Extract and interpret data from graphs and tables. -Translate information on reaction times to numerical and graphical form -Continue to develop understanding of practical terminology -Interpret graphs and data on the effects of insulin on blood glucose levels -Consider the social and ethical issues of living with diabetes and the link between type 2 and obesity -Build on comparison skills – blood content before after filtration -Evaluate the treatments for kidney failure considering the social and ethical issues with particular focus on transplants -Build on skills of interpreting data from tables and graphs in relation to hormones and the menstrual cycle -Build on evaluation skills – pros and cons of contraception method -Evaluate fertility treatments and the ethical issues associated with these (HT) Improve understanding of how scientific technologies can be used to our advantage 	<ul style="list-style-type: none"> -Homework -Starter tasks/tests covering prior knowledge - Practical questions around reflex actions and other areas -Gap fill for synapses applying the correct key terminology -PPQ on the Brain and Eye -Identification of structures during kidney dissection -Research and collaborative sharing activity to describe and evaluate types of contraceptives- link to Catholic teachings -Debate/discussion on fertility treatments - Evaluate graphs on blood glucose control to illustrate negative feedback understanding -AfL throughout lessons -Follow a method and measure the effect of environmental factors on the growth of germinated seedlings -Mock 2

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	<ul style="list-style-type: none"> - Describe the use of hormones in treating infertility and the process of IVF (HT) - Role of adrenaline and thyroxine - Describe the process of negative feedback - Role of plant hormones in controlling and co-ordinating response to light and gravity - Use of plant hormones. 	<ul style="list-style-type: none"> -Use of modelling to explain a process of negative feedback mechanisms -Build on and interpret results from Required Practical 8 (effect of light on newly germinated seedlings) - Understand theories and tests that provide evidence for plant hormones and their effects 	
<p>Inheritance topic</p>	<ul style="list-style-type: none"> - Structure of chromosomes, process of mitosis and the cell cycle (from Topic 1) - Describe the differences between sexual and asexual reproduction (advantages and disadvantages) - Be familiar with the process of meiosis and why it is necessary. - Compare mitosis and meiosis. - Describe DNA structure and the human genome - Process of protein synthesis - Use genetic cross diagrams to determine genetic inheritance. -Be familiar with genetic disorders – causes, symptoms, treatments and how sex is determined - How to make informed judgements about the economic, social and ethical issues concerning embryo screening - Know that variation can arise from mutation - Causes of variation and examples of environmental and genetic variation - Describe the process of selective breeding and know advantages/disadvantages it has associated - Define genetic engineering and describe the processes involved. - Advantages and disadvantages of genetic 	<ul style="list-style-type: none"> -Model with equipment the behaviour of chromosomes during cell division -Debate the advantages and disadvantages of studying the human genome -Use models to represent protein synthesis -Recall key terminology regarding DNA structure and how this acts as the code for producing proteins -Apply knowledge of inheritance to contextualised examples -Use fraction and percentages to demonstrate probability -Construct and interpret genetic cross diagrams -Apply knowledge of inheritance to contextualised examples -Develop evaluation skills -Improve understanding of the need to consider ethical issues -Categorise variation in terms of genetic or environmentally driven or a combination of both - Recall, in detail, processes for selective breeding and genetic engineering and uses of each in agriculture and industry -Evaluation skills 	<ul style="list-style-type: none"> -Homework -PPQ -Topic tests (ongoing once a week throughout Year 11 on all topics covered since Year 9) -Mock 2

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	<p>engineering</p> <ul style="list-style-type: none"> - Understand the theory of evolution by natural selection - Apply the concept of natural selection to explain antibiotic resistance and the issues this has caused - Be familiar with the works of Lamarck, Darwin and Wallace - Interpret evolutionary trees - The process of classification and the systems that have developed for this purpose - What are fossils and how can we use them - Causes of extinction, awareness of endangerment and some examples - Describe the process of speciation 	<ul style="list-style-type: none"> -Improve understanding of the need to critically review evidence and peer review data and outcomes - Create links between mutations and antibiotic resistance and knowledge of how to avoid this happening more frequently -Read and interpret evolutionary trees and use them to identify the closeness of common ancestors -Appreciate problems with the fossil record and reasons for the gaps -Consider methods to avoid extinction and relate to the impact of biodiversity of an area leading to our next topic 	
<p>Ecology review (students had worked on this as a summer project)</p>	<ul style="list-style-type: none"> - Review of Ecology content learnt over Summer months - Be familiar with conditions needed for decomposition. - Advantages and disadvantages of decomposition - How organisms distribute themselves and how this can be measured. 	<ul style="list-style-type: none"> -Demonstrate ability to sample effectively by carrying out Practical 9 (Measure the population size of a common species in a habitat) -Use of transects and quadrats in the field. -Randomly generating coordinates -Ethical issues associated with sampling organisms -Build on evaluation skills 	<ul style="list-style-type: none"> -PPQs -Questions linked to practical -Individuals demonstrate knowledge how and why they need to generate random coordinates to eliminate bias -Ecology topic test -Completion of tasks from homework booklet checked at the start of the year
<p>Ecology summer homework booklet</p>	<ul style="list-style-type: none"> - Be familiar with specific key terms e.g. community, ecosystem, interdependence. - Describe ecosystems in terms of their biotic and abiotic factors. -Describe adaptations of organisms and introduce the idea of competition for a variety of needs and resources - Feeding relationships within a community. - How materials are cycled within the environment. - Biodiversity 	<ul style="list-style-type: none"> -Recall key terminology - Add to experimental skills with Required Practical 7 (Measure the population size of a common species in a habitat) Use of transects and quadrats in the field. - - - Develop awareness of ethical issues associated with sampling organisms -Interpret graphs to model predator-prey cycles. -Build on evaluation skills -Understand the terms mean, mode and median -Calculate a mean from data provided on sampling 	<ul style="list-style-type: none"> -Homework booklet -PPQ -Topic tests (ongoing once a week throughout Year 11 on all topics covered since Year 9) -Mock (as much as has been covered) -Analyse and Evaluate data collected from sampling practical

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	<ul style="list-style-type: none"> - Waste management -Types of land, water and air pollution -Land use and deforestation – Causes and consequences - Global warming - Methods for maintaining biodiversity 	<ul style="list-style-type: none"> - Build on skill of extracting and interpreting information from graphs, tables, charts. -Evaluate associated personal, social, economic and environmental implications; and make decisions based on the evaluation of evidence and arguments. -Describe and evaluate, with the help of data, methods that can be used to tackle problems caused by human impacts on the environment. -Build on understanding of the need for data analysis and peer review when studying climate change. -Consider ways to reduce future damaging impacts on the environment 	
<p>Exam Preparation (altered due to exam board updates for 2022 exams)</p>	<ul style="list-style-type: none"> -Consolidation of homeostasis topic and Inheritance topic -Review paper 1 topics and required practicals to be assessed -Highlight and recall methods of the required practicals -Know how to approach the exams techniques to aid in revision 	<ul style="list-style-type: none"> -Revision techniques to support individual needs -Knowledge of where to find resources to help prepare for exams -Ability to interpret questions and strategies to aid individuals e.g. highlighting key words, looking at marks available etc. 	<ul style="list-style-type: none"> -PPQ -Revision looms and questions attached -AfL in Intervention sessions and in lessons