

Curriculum maps with Christian, spirituality and school ethos links

Subject: Biology A-level

Year: 12 and 13

Topics and links	Autumn Term Yr 12		Spring Yr 12		Summer Yr 12	
	Cycle A	Cycle B	Cycle C	Cycle D	Cycle E	Cycle F
	<p>Basic components of living systems</p> <p>Biological Molecules</p> <p>Plasma membranes</p>	<p>Enzymes</p> <p>Cell divisions</p> <p>Exchange surfaces and breathing</p>	<p>Transport in animals</p> <p>Transport in plants</p> <p>Classification and evolution</p>	<p>Biodiversity</p> <p>Communicable diseases</p>	<p>Exam preparation and resilience</p>	<p>Photosynthesis</p> <p>Respiration</p>
<p>Links with Values and Christian ethos and spiritual development opportunities</p>	<p>Basic components of living systems What makes up the building blocks of your life? How important are those building blocks in your life? Are they all essential?</p> <p>Biological Molecules All molecules are made from other molecules and we can constantly rearrange and react molecules to make new</p>	<p>Enzymes Enzymes and their optimum conditions. Do we all have optimum conditions that we work best at? How can we identify these conditions and use them to improve our output?</p> <p>Cell divisions Stem cells – should we use them or not? Should we be allowed to create embryonic stems for research and treatment? Everyone with have differing views – who is right, who is wrong? How can we listen and respect</p>	<p>Transport in animals The human heart beats with a perfect synchronised motion – what happens when it goes wrong and how can it be resolved? Sometimes in life we can experience hurdles that can put us out of synchronisation – how do we show resilience and overcome them?</p> <p>Transport in plants We are reliant on plants to survive but they are often overlooked – who gets overlooked in our society?</p>	<p>Biodiversity Diversity should be embraced and celebrated in all its forms – right or wrong?</p> <p>Communicable diseases Communicable diseases rely on humans being social beings – what happens if we are less sociable? Would it be advantageous to the human race if we stopped having so much contact, stopped travelling and worked from home more? Would there be any negative impacts?</p>	<p>Exam preparation and resilience and courage to face up to the challenge ahead.</p>	<p>Photosynthesis The rate of photosynthesis can be limited by a factor if it is in short supply. Is there something that is limiting your achievements? How can you find a solution to the limiting factor?</p> <p>Respiration Respiration is a series of complex processes that all rely on the previous process having been completed successfully for the next to be able to work – how do we all</p>

	<p>molecules – as individuals how are we constantly changing and reacting to the world around us?</p> <p>Plasma membranes Movement across membranes can happen either passively or actively with the need for energy to go against the gradient – are there times when you need extra help, support or courage to go against the gradient?</p>	<p>differing views whilst still disagreeing with them?</p> <p>Exchange surfaces and breathing The respiratory system is a thing of beauty that has several tissues and organs working together as one to carry out exchange of gases – a good example of when we all have a common goal to reach and if we work together it can be achieved.</p>	<p>Classification and evolution Evolution is a theory. Any theory is only as good as the evidence that supports it. Does this mean that we should dismiss all other theories? Do other scientists’ theories have a right to be heard? Link to how Darwin’s theory of Natural selection was first received. If you have an idea and at first you do not succeed with it – do you dismiss it or have faith in it and persevere?</p>			<p>handle the responsibility of a job that means others are depending on us?</p>
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	Autumn Term Yr 13		Spring Yr 13		Summer Yr 13	
	Cycle A	Cycle B	Cycle C	Cycle D	Cycle E	Cycle F
Topics and links	<p>Neuronal communication</p> <p>Hormonal communication</p>	<p>Plant responses</p> <p>Homeostasis</p> <p>Genetics of living systems</p>	<p>Patterns of inheritance</p> <p>Manipulating genomes</p> <p>Cloning and biotechnology</p>	<p>Ecosystems</p> <p>Populations and sustainability</p>	<p>Exam preparation and resilience</p>	<p>Exams</p>

<p>Links with Values and Christian ethos and spiritual development opportunities</p>	<p>Neuronal and Hormonal communication Communication relies on listening to what is going on around you, processing the information and responding appropriately to what is being asked – how well do we communicate with friends, family and teachers?</p>	<p>Plant responses Plants sense the environment around them on respond appropriately – how well are you able to read the environment around you and respond accordingly?</p> <p>Homeostasis Homeostasis is all about balance. Not having too much or too little of something in the body, otherwise you will become unwell. Do you have balance in your life? Have you got too much or too little of something? Can you do something about it?</p> <p>Genetics of living systems Genes can go wrong and mutations can occur – this can have drastic consequences on the body. When things go wrong how do you respond? Can you adapt? Can you show resilience?</p>	<p>Patterns of inheritance Where have we come from? Why do we look the way we do? Is it all genetics or do we have say in how we turn out?</p> <p>Manipulating genomes Science and technology has given us the opportunity to manipulate life. Should we use it? If you have the ability to do something, does that mean that you should?</p> <p>Cloning and biotechnology Cloning is a big debate. In any debate, on any topic, are you able to listen to both sides of the debate and make your own informed decision?</p>	<p>Ecosystems As humans what is our role and responsibilities in an ecosystem? Are we able to except and act upon roles and responsibilities? What are some barriers we might experience when we get handed roles and responsibilities?</p> <p>Populations and sustainability The human population is growing and habitat is shrinking. How can we find a balance between the two? When there are two equally strong arguments in any situation, how do you find the balance to keep everyone happy whilst still showing kindness and empathy?</p>	<p>Exam preparation and resilience and courage to face up to the challenge ahead.</p>	<p>Empathy and kindness to support others in their preparations.</p>
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Sixth form Biology

1. **Courage:** Becoming confident to face challenges in a challenging science environment.
2. **Forgiveness:** Working in teams and accepting mistakes of team members.
3. **Honesty:** Working independently. Students honest with themselves as well as those around them.
4. **Kindness:** Working with peers, helping them when they struggle.

5. **Respect:** Respecting the opinions of others.
6. **Empathy:** Understanding that different pupils come from different backgrounds in science. Understanding how issues raised in science make others feel.
7. **Resilience:** Completing tasks even though the style of challenge may seem daunting and new. Being able to evaluate work and learn from mistakes.