

## Curriculum maps with Christian and school ethos links

Subject: Science

Year: 7

Topics and links	Autumn Term		Spring		Summer	
	Intro Cycle	Cycle A	Cycle B	Cycle C	Cycle D	Cycle E
Safety in the lab  Foundation science skills	1.1 Speed  5.1 Particle model  8.2 Cells	1.2 Gravity  6.2 Metals and non-metals  8.1 Movement	2.1&2.2 PD and Current (Electricity)  10.1 Variation  10.2 Human reproduction	6.1 Acids and Alkalis  3.1 Energy Costs  3.2 Energy transfer	5.2 Separating mixtures  7.1 Earth structure  9.1 Interdependence	
<b>Oak Academy Unit/s</b>	7CP 7PF	7BC 7CC	8PE 7BR	7PE (7CC)	8BE 8CM	
<b>Links with Values and Christian ethos and spiritual development opportunities</b>	<p>Concepts of <b>respect</b> and <b>kindness</b> – what is living?</p> <p>How should living things that we study be treated?</p> <p><b>Project:</b> What living species should we be allowed to use to conduct scientific research on? (Scaffolding: Consider all Kingdoms / Different animal Phylum etc...)</p>	<p><u>6.2 Metals and non-metals</u></p> <p>Use of metals over time – ‘why was gold a significant gift to baby Jesus’?</p> <p><u>8.1 Movement</u></p> <p>Tissues in the body work as a cohesive team – parallels with the <b>respect</b> we should have for each other</p> <p><b>Project:</b></p>	<p><u>10.1 Variation</u></p> <p><b>Respect</b> for difference between individuals. <b>Empathy</b> to understand that variation puts people in brackets that have stigma attached to them.</p> <p><u>10.2 Human reproduction</u></p> <p><b>Courage</b> – Making the right decisions, amongst difficult temptations.</p> <p><b>Project:</b> What options are there for people that want to have children but cannot conceive?</p>	<p><u>3.1 Energy costs</u> <b>Respect</b> for resources and our world.</p> <p><b>Project:</b> Our reserves of fossil fuels are running out and using them has consequences for people and the environment. What can governments do to counter these issues?</p>	<p><u>9.1 Interdependence</u> <b>Respect</b> for our environment and other species. <b>Resilience</b> to see how adaptations are necessary when circumstances in an ecosystem change.</p> <p><b>Project:</b> Interdependence:  How are species in an ecosystem dependent on other species in the ecosystem</p>	

			Build a model to show how muscles work together in the human body.	Which values would these people need to show?  (Scaffold: IVF, Adoption, Surrogacy, Hormone treatments...)		How might this be related to how individuals impact the world around them?
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**Year 7 Science – Journey through science**

1. **Courage:**

Becoming confident in a new science environment.

2. **Forgiveness:**

Working in teams and accepting mistakes of team members.

3. **Honesty:**

Reporting accidents, being confident to ask for help.

4. **Kindness:**

Working with peers, helping them when they struggle.

5. **Respect:**

Learning how to behave appropriately in a science lab. Listening to 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 practical tasks even though the tasks may seem daunting and new. Being able to evaluate work and learn from mistakes.

Topics and links	Autumn Term		Spring		Summer	
	Cycle A	Cycle B	Cycle C	Cycle D	Cycle E	
	1.3 Contact forces 8.3 Breathing 7.2 Universe	2.3 & 2.4 Magnetism 9.3 Respiration 4.1 Sound	3.4 Heating and cooling 5.4 Elements 9.4 Photosynthesis	4.2 Light 6.3 Chemical energy 8.4 Digestion	6.4 Types of reaction 7.4 Earth resources 10.3 & 10.4 Evolution and inheritance	
<b>Oak Academy Units</b>	9PF 9BB	9PS (9BB)	8CP 9BP	8PL 8BD	9CR 9PM	
<b>Links with Values and Christian ethos and spiritual development opportunities</b>	What <b>values or lack of values</b> did Copernicus and the church display when his new model was presented?	Working together in teams to make models.	Research all the elements that are needed in a mobile phone / your wardrobe / your school bag. If any of these didn't exist how would life be different?  Do you really need all these elements to be happy? What else do you need?	Research what 'light' means in different religions.  For Christians - John 8:12.  What is the link between this idea of light, and a scientists idea of light?	To identify how each of the Sexeys Seven values in our lives can help us live responsibly.	

Year 8 Science – Journey through science

1. **Courage:**

Building confidence in science to undertake more independent practical work. Having the confidence to engage with and explain observations. Identifying how new ideas in science required scientists to stand up against established beliefs.

2. **Forgiveness:**

Working in teams and accepting mistakes of team members. Learning about scientific research that has had negative impacts on some people – can we forgive these scientists for their work?

3. **Honesty:**

Reporting accidents, being confident to ask for help. Considering what is necessary to be able to trust the research done by scientists.

4. **Kindness:**

Working with peers, helping them when they struggle. The ethics of scientific investigations.

5. **Respect:**

Learning how to behave appropriately in a science lab. Listening to the opinions of others. Applying our knowledge to understand and respect our environment

6. **Empathy:**

Understanding how issues raised in science make others feel. Considering the feelings of others that find topics being studied hard.

7. **Resilience:**

Completing tasks even though the tasks may seem daunting or unachievable. Being able to evaluate work and learn from mistakes.

Topics and links	Autumn Term		Spring		Summer
	Cycle A	Cycle B	Cycle C	Cycle D	Cycle E
	9.2 Plant Reproduction 1.4 Pressure 4.3/4.4 Waves 5.4 Periodic Table 7.3 Climate	Biology Part 1  Physics Part 1	Biology Part 2  Chemistry Part 1	Chemistry Part 2  Physics Part 2	How science works and practical focus
<b>Oak Academy Units</b>	9BP 8CP	B1 P1	B3 C1	C2 P3	B2 B4
<b>Links with Values and Christian ethos and spiritual development opportunities</b>	How are we showing consideration for the world around us and respect for those who share our community?	What have people believed the building blocks were in the past? What values did people need to express to let new ideas develop?	Where will we get our electricity from in the future?  What values will influence how we make decisions about our energy production in the future.	Can you identify an engineer / architect / designer that has had to show particular courage or resilience to make their design successful.	How can we make a positive contribution to the world around us?

Year 9 Science – Journey through science

1. **Courage:**

Having confidence to apply synoptic links from other subjects and within science to develop understanding. Identifying how new ideas in science required scientists to stand up against established beliefs.

2. **Forgiveness:**

Working in teams and accepting mistakes of team members. Learning about scientific research that has had negative impacts on some people – can we forgive these scientists for their work? Do we blame the scientists for how their research was used?

3. **Honesty:**

Reporting accidents, being confident to ask for help. Questioning the trust put in the research done by scientists.

4. **Kindness:**

Working with peers, helping them when they struggle. The ethics of scientific investigations.

5. **Respect:**

Behaving appropriately in a science lab, amongst more hazardous equipment or chemicals. Listening to the opinions of others. Making a link between the respect we have for our environment and the research undertaken by scientists.

6. **Empathy:**

Understanding how issues raised in science make others feel. Considering the feelings of others that find topics being studied hard. Can we understand how it feels to be affected by some of the global issues introduced in science.

7. **Resilience:**

Completing tasks even though the tasks may seem daunting or unachievable. Being able to evaluate work and learn from mistakes. Taking ownership of learning and outcomes to identify and resolve historic areas of weakness.

## Subject: Science

### Year 10 and 11 Science

#### 1. **Courage:**

Having confidence to apply synoptic links from other subjects and within science to develop understanding. Identifying how new ideas in science required scientists to stand up against established beliefs. Taking ownership of attainment and having the courage to ask for help from teachers, peers and family.

#### 2. **Forgiveness:**

Working in teams and accepting mistakes of team members. Learning about scientific research that has had negative impacts on some people – can we forgive these scientists for their work? Do we blame the scientists for how their research was used? Forgiving ourselves and amending our ways if the effort in previous years has made it difficult to achieve as well as we think we could.

#### 3. **Honesty:**

Reporting accidents, being confident to ask for help. Questioning the trust put in the research done by scientists.

#### 4. **Kindness:**

Working with peers, helping them when they struggle. The ethics of scientific investigations.

#### 5. **Respect:**

Behaving appropriately in a science lab, amongst more hazardous equipment or chemicals. Listening to the opinions of others. Making a link between the respect we have for our environment and the research undertaken by scientists.

#### 6. **Empathy:**

Understanding how issues raised in science make others feel. Considering the feelings of others that find topics being studied hard. Can we understand how it feels to be affected by some of the global issues introduced in science? Relating scientific research to the impact it has had on different people's lives.

#### 7. **Resilience:**

Completing tasks even though the tasks may seem daunting or unachievable. Being able to evaluate work and learn from mistakes. Taking ownership of learning and outcomes to identify and resolve historic areas of weakness. To rise above past difficulties in science to achieve the best that is possible.

Year: 10 Physics (Double and Triple)

Topics and links	Autumn Term		Spring		Summer	
	Cycle A	Cycle B	Cycle C	Cycle D	Cycle E	
	Electrical circuits and static electricity	Electricity in the home Heat Transfer by heating	Molecules and matter	Radioactivity	Waves	
<b>Oak Academy Units</b>						
<b>Links with Values and Christian ethos and spiritual development opportunities</b>	<p>Components in electrical circuits have 'resistance' to the flow of charge.</p> <p>Put resistors in series with each other and the resistance increases. However, if they are put in parallel, and there is a choice of routes for the Coulombs of charge the resistance drops.</p> <p>If students make choices that give them numerous 'parallel' routes in the</p>	<p>If everything works well, the Earth wire in a plug never gets used.</p> <p>It is, in some ways, similar to the net underneath a tight rope walker.</p> <p>What other features are there in your life to 'catch you' if you fall?</p>	<p>In the film 'Alien' the strap line states: "In Space No-one can hear you scream".</p> <p>Do you know of people in real-life who feel that they are in a vacuum too, and have silent voices?</p>	<p>Risks vs Rewards:</p> <p>Is it right to use radioactive medical treatments that can cause cancer?</p> <p>Should the UK have a nuclear bomb?</p>	<p>X-rays and gamma rays are used for imaging the human body, but their use includes a risk.</p> <p>When is it not right to use these imaging techniques?</p>	



	development – does this make their life better?					
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Subject: Science

Year: 11 Physics (Double and Triple)

Topics and links	Autumn Term		Spring		Summer	
	Cycle A	Cycle B	Cycle C	Cycle D	Cycle E	
	Forces in balance Space (Triple only)	Motion Forces and motion Forces and Pressure	Waves Light Electromagnetism	Revision	Exams	
<b>Oak Academy Units</b>						
<b>Links with Values and Christian ethos and spiritual development opportunities</b>	<p>Newton's third law states that every action has an equal and opposite reaction.</p> <p>Is the same true for how people should behave?</p> <p>Mathew 5 38-42</p>	<p>Terminal velocity happens because the force pulling something in one direction is matched by the opposing forces in the other direction.</p> <p>What in your life makes you feel that however hard you push forward, the backward push will match it?</p>	<p>Magnetism is a 'non-contact' force.</p> <p>What other 'invisible' forces exist in your life?</p>	<p>Before the Big Bang – can scientists offer any more conclusive answers to creation than religion?</p>		

Subject: Science

Year: 10 Chemistry

Topics and links	Autumn Term		Spring		Summer	
	Cycle A	Cycle B	Cycle C	Cycle D	Cycle E	
	Periodic Table Structure and Bonding	Structure and Bonding Chemical Changes	Chemical Changes Electrolysis	Chemical Maths Energy changes	Earth's Resources	
<b>Oak Academy Units</b>	C1 C2	C2 C5	C3	C4	C10	
<b>Links with Values and Christian ethos and spiritual development</b>	The Periodic Table was created by looking at patterns to create order from 'chaos'. What can we do to bring order in our lives?	Atoms are held together in different ways and combined to form the building blocks of all substances in the universe.	Electrolysis uses electricity to split chemicals back into their most basic components.	The calculation of exact amounts allows us to reduce waste which is better for our planet.	What responsibility do we have to the resources we use?	

<b>opportunities</b>		Who are the building blocks in your life?	What are the 'basic components' that make you who you are? Could you still be who you are without them?	The energy needed to break a bond is equal to the energy released when it forms.  Where else do we see a balance between input and output?		
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Subject: Science

Year: 11 Chemistry

<b>Topics and links</b>	<b>Autumn Term</b>		<b>Spring</b>		<b>Summer</b>	
	<b>Cycle A</b>	<b>Cycle B</b>	<b>Cycle C</b>	<b>Cycle D</b>	<b>Cycle E</b>	
	Crude oil and Chemical Analysis	Rates and Equilibrium	Earth's atmosphere and Earth's resources	Revision and Exams	Revision and exams	

<b>Oak Academy Units</b>	C3 C4	C6	C7			
<b>Links with Values and Christian ethos and spiritual development opportunities</b>	<p>Chemical analysis allows us to look at what makes up a substance.</p> <p>What are the 'basic components' that make you who you are? Could you still be who you are without them?</p>	<p>Franz Haber – Nobel peace prize for fertiliser research, but oversaw WW1 Chemical weapons development and deserted his family.</p> <p>Saviour or Villain?</p> <p>Equilibrium is all about balance. Is it truly possible to have balance in our lives?</p>	<p>Our reliance on fossil fuels is having long lasting impacts.</p> <p>Reflect on the possible impacts our actions today might have on the future.</p>			

Subject: Science

Year: 10 Biology

<b>Topics and links</b>	<b>Autumn Term</b>		<b>Spring</b>		<b>Summer</b>	
	<b>Cycle A</b>	<b>Cycle B</b>	<b>Cycle C</b>	<b>Cycle D</b>	<b>Cycle E</b>	
	Organisation and the digestive system	Organising animals and plants  Communicable and non-communicable diseases	Communicable and non-communicable diseases  Photosynthesis	Photosynthesis  Respiration  Human nervous system  Hormonal Coordination	Hormonal Coordination  Recap Required practicals	

<b>Oak Academy Units</b>						
<b>Links with Values and Christian ethos and spiritual development opportunities</b>	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?	Heart transplant and xenotransplantation. Is the current system fair? How can we improve it? Is a human life more valuable than an animal life?	Would a world without disease be a better place?	Plants – are they our saviours?	Contraception. Varying religious and personal views on the use and types of contraception. Should we respect them or are they unrealistic and unhelpful. Different people have different beliefs – how do we manage discussing, disagreeing, agreeing but ultimately continuing to respect differing viewpoints whilst having the courage to share our own?	

Subject: Science

Year: 11 Biology

<b>Topics and links</b>	<b>Autumn Term</b>		<b>Spring</b>		<b>Summer</b>	
	<b>Cycle A</b>	<b>Cycle B</b>	<b>Cycle C</b>	<b>Cycle D</b>	<b>Cycle E</b>	

	Reproduction	Genetics and evolution Adaptations Variation and evolution	Ecosystems Adaptations	Revise	Exams	
<b>Oak Academy Units</b>						
<b>Links with Values and Christian ethos and spiritual development opportunities</b>	Screening of embryos. What decisions can/should or are made as a result? What emotions are involved? Whose decision should it be? Who should be allowed to have the final say? Should we be allowed to screen in the first place? What should we be allowed to screen for? Where do you draw the line on embryo selection? What should parents be allowed to select for and against? Is this what nature intended?	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?	Human population explosion, global warming, air pollution and water pollution. Where does our individual responsibility for these lie?			

