

KS4 Biology – The Human Body

Subject curriculum intent:	<p>To develop in our students:</p> <ul style="list-style-type: none"> • An enjoyment of Science by providing relevant, interesting and challenging experiences and activities. • Observational skills, by looking for patterns and contrasts. • An inquiring mind and a logical approach to problem solving. • The ability to draw conclusions from simple experiments and, where appropriate, to devise suitable experiments for further investigations. • Communication skills in speaking and listening, written, diagrammatic and symbolic forms. • Co-operation and a respect for others by being able to work as part of a team – the development of appropriate social skills. • Confidence in their own abilities. • A respect for the environment and a careful use of resources. • An interest in the world about them and a greater understanding of it. 		
End of KS3 intent/outcome	End of KS4 intent/outcome	End of KS5 intent/outcome	
Students will build on their knowledge of science through the different areas – biology chemistry and physics. Students will ‘work scientifically’ to achieve the goals of each topic area they encounter.	Students will continue to develop their scientific knowledge through the different areas – biology, chemistry and physics. Students will ‘work scientifically’ to achieve the goals of each topic area they encounter. Students will be able to relate their scientific experiences to everyday life and have an understanding that science is all around them.	N/A	
Intent for this topic:	<p>Students will have the opportunity to learn about different parts of the body. They will learn about the different body parts, organs, digestion, teeth, skeleton, muscles and the circulatory system and their functions to how our body works. Students will have the opportunity to see how the different parts of the body work together and make different models to investigate how the body parts work.</p> <p>Students will ‘work scientifically’ to achieve these goals, learning the key features of scientific enquiry; observing over time, pattern seeking, identifying, classifying, investigating (fair tests) and researching.</p>		
Core vocabulary needed for this subject/topic:	<p><u>Subject:</u> Biology, Chemistry, Physics Observe, pattern, identifying, classifying, investigating, fair test, researching</p> <p><u>Topic:</u> Body parts – head, arms, hands, legs, feet, eyes, nose, mouth Organs – brain, lungs, intestines, liver, kidneys, stomach</p>		

	<p>Digestion – digestive system, mouth, oesophagus, stomach, liver, pancreas, small intestine, large intestine Skeleton – skull, jaw, backbone, collarbone, breastbone, rib, humerus, femur, kneecap Skeleton 4 Main Functions – protection, support, blood cells, movement Muscles – muscle, tendon, bone, tricep, bicep, antagonistic muscles, contract, relax. Circulatory system Heart – ventricle, atrium, valve, blood, oxygenated blood, deoxygenated blood. Lung – muscles, contract, expand, relax, shrink, diaphragm, air sacs, trachea, bronchi Blood vessels - Artery, veins, capillaries Exercise Functions</p>			
Vocabulary pupils will have accessed in other topics or subject areas:	<p>Body parts, Organs, Digestion, teeth, Circulatory system, Blood vessels Movement, functions, exercise</p>			
Key vocabulary taught within this topic:	<p>Body parts – head, arms, hands, legs, feet, eyes, nose, mouth Organs – brain, lungs, intestines, liver, kidneys, stomach Digestion – digestive system, mouth, oesophagus, stomach, liver, pancreas, small intestine, large intestine Teeth – incisors, canines, premolars, molars, wisdom teeth, saliva Skeleton – skull, jaw, backbone, collarbone, breastbone, rib, humerus, femur, kneecap Skeleton 4 Main Functions – protection, support, blood cells, movement Muscles – muscle, tendon, bone, tricep, bicep, antagonistic muscles, contract, relax. Circulatory system Heart – ventricle, atrium, valve, blood, oxygenated blood, deoxygenated blood. Lung – muscles, contract, expand, relax, shrink, diaphragm, air sacs, trachea, bronchi Blood vessels - Artery, veins, capillaries Exercise Functions</p>			
Big Questions	<p>How does our body work? How does food move through our body? How do we move? How do we breathe?</p>			
Prior knowledge: what pupils may already have studied				
Key stage	Subject	Topic title	Term/year taught	Content/What might pupils already know?
KS3	Science	My Body: organs and senses.	Autumn 1/Year 2	Students may have learnt about the different body parts and different organs and their functions.

KS3	Science	Heart, lungs and circulation	Autumn 2/Year 3	Students may have learnt about the different parts of the heart and lungs and how they work. Students may have learnt how the circulatory system works with the heart to pump blood around the body.
KS3	Science	Healthy Life Styles: Food and Digestion	Autumn 2/Year 3	Students may have learnt about the digestive system and know some of the names of the organs in the digestive system and the functions.
KS3	PSHCE	Relationship and Sex Education	Summer/Every year	Students may have learnt about different body parts and how to brush their teeth during their RSE lessons.
Links to other subjects: PSHCE				
Links to equality and diversity: William Harvey (explained blood circulation for the first time)				

	<u>OU P Steps 5-6</u>	<u>OU P Steps 7-8</u>	<u>OU Step 1</u>	<u>OU Step 2</u>	<u>OU Step 3</u>
<u>Subject specific knowledge</u>	<p><u>Body Parts & Organs</u> Knows the name and match the main body parts e.g. head, leg using signs or symbols.</p> <p>Knows the name 3 main organs e.g. heart, lungs, brain using signs or symbols.</p>	<p><u>Body Parts & Organs</u> Knows the names of most of the external body parts.</p> <p>Knows the name of 4 main organs in the body e.g. brain, heart, lungs, intestines</p> <p>Can match the function to the organ.</p>	<p><u>Body Parts & Organs</u> Knows the names of all main external body parts.</p> <p>Knows the names of the main organs in the body e.g. brain, heart, lungs, liver, intestines, kidneys, stomach</p> <p>Knows some of the functions of the key organs in the body.</p>	<p><u>Body Parts & Organs</u> Knows the names of less easily defined body parts e.g. chest, elbow, knee, cheek.</p> <p>Knows the names of the main organs in the body.</p> <p>Knows the functions of the key organs in the body.</p>	<p><u>Body Parts & Organs</u> Can link particular body parts to particular life processes.</p> <p>Knows the names of the main organs in the body and explain their functions - brain, heart, lungs, intestine, liver, kidneys, stomach</p> <p>Know the names of other internal parts of the body, e.g. skeleton, muscles, arteries, veins.</p>
	<p><u>Digestion & Teeth</u> Knows that the digestive system has different parts.</p>	<p><u>Digestion & Teeth</u> Can label different parts of the digestive system.</p>	<p><u>Digestion & Teeth</u> Knows the names of the different parts of the digestive system.</p>	<p><u>Digestion & Teeth</u> Knows the key parts of the digestive system.</p>	<p><u>Digestion & Teeth</u> Knows the key parts of the digestive system.</p> <p>Knows the different functions of the</p>

	<p>Can label different parts of the digestive system using symbols.</p> <p>Knows that there are different teeth that are different shapes and sizes.</p> <p>Knows we need to brush our teeth twice a day.</p>	<p>Can match the function to each part of the digestive system.</p> <p>Can label the different teeth.</p> <p>Can match the function of each of the teeth.</p> <p>Knows how to brush their teeth.</p>	<p>Can sequence how food travels through the digestive system.</p> <p>Knows the names of different teeth.</p> <p>Can explain the function of each of the teeth.</p> <p>Know that you don't need wisdom teeth.</p> <p>Can sequence how to brush your teeth.</p>	<p>Knows the functions for the different parts of the digestive system.</p> <p>Knows the name of all the teeth and their function.</p> <p>Know that your teeth and saliva break down food in your mouth.</p> <p>Can explain how to clean your teeth in their own words.</p>	<p>digestive system and can explain how food travels through the digestive system.</p> <p>Knows the name of the teeth in the mouth and their function.</p> <p>Can explain how saliva is produced and how it helps to break down food.</p> <p>Can explain how to keep good dental hygiene and the products you use.</p>
	<p><u>The Skeleton & Muscles</u></p> <p>Can label different bones in the skeleton using symbols.</p> <p>Can match the different bones in your skeleton to the body part.</p> <p>Know that muscles and bones work together to help us move.</p>	<p><u>The Skeleton & Muscles</u></p> <p>Can label different bones in the skeleton.</p> <p>Knows which part of the body you can find different bones.</p> <p>Knows the name of 4 different bones in the body.</p> <p>Know that bones protect your organs in the body.</p> <p>Know that bones and muscles work together to help us move.</p>	<p><u>The Skeleton & Muscles</u></p> <p>Knows the names of different bones in the body.</p> <p>Can match the functions to some of the different bones in the body.</p> <p>Know the 4 main functions of bones - protection, support, making blood cells and movement.</p> <p>Can match the bones to which organ they protect in the body.</p>	<p><u>The Skeleton & Muscles</u></p> <p>Knows the names of different bones in the body.</p> <p>Know the different functions of the bones in the body.</p> <p>Can identify the 4 main functions of the skeleton.</p> <p>Knows which bones protect which organs in the body.</p>	<p><u>The Skeleton & Muscles</u></p> <p>Knows the names of the different bones in the body and can explain how they work.</p> <p>Can explain the 4 main functions of the skeleton - protection, support, making blood cells and movement.</p> <p>Know which bones protect which organs in the body.</p> <p>Can explain how muscles and bones work</p>

	<p><u>Heart, Lungs & The Circulatory System</u> Knows that the circulatory system includes the heart.</p> <p>Knows the function of the heart and lungs.</p> <p>Can match the function of the heart and lungs.</p> <p>Know that we breathe in oxygen through the mouth.</p> <p>Know that blood moves around the body.</p> <p>Know that exercise can change your heart rate and breathing.</p>	<p><u>Heart, Lungs & The Circulatory System</u> Knows that the circulatory system includes the heart.</p> <p>Can explain the function of the heart and lungs.</p> <p>Know that we breathe in oxygen through the mouth.</p> <p>Can label a diagram of the heart. Can label a diagram of the lungs.</p> <p>Can sequence how the heart and lungs work.</p> <p>Knows that blood carries oxygen around the body.</p> <p>Know that exercise can change your heart rate and breathing.</p>	<p>Know that bones and muscles work together to help us move.</p> <p>Can explain how muscles help the bones move using some key words.</p> <p><u>Heart, Lungs & The Circulatory System</u> Knows that the circulatory system includes the heart and helps transport blood around the body.</p> <p>Can label a diagram of the heart. Can label a diagram of the lungs.</p> <p>Can explain how the heart and lungs work using key words and sentence scaffolds.</p> <p>Know that oxygen is absorbed into the blood.</p> <p>Can explain what happens to your heart and lungs during and after exercise.</p> <p>Knows some ways exercise can benefit the heart and lungs.</p>	<p>Can explain how muscles and bones work together to help us move using key words.</p> <p>Know antagonistic muscles work in pairs.</p> <p>Know the names of some of the muscles in the body.</p> <p><u>Heart, Lungs & The Circulatory System</u> Knows that the circulatory system is a system which includes the heart, veins, arteries and blood transport substances around the body.</p> <p>Can label and explain the function of the heart using some key words.</p> <p>Can label and explain the function of the lungs using some key words.</p> <p>Can explain how the lungs work using some key words.</p>	<p>together to help us move.</p> <p>Can explain how antagonistic muscles work in pairs.</p> <p>Know the names of muscles in the body.</p> <p><u>Heart, Lungs & The Circulatory System</u> Knows that the circulatory system is a system which includes the heart, veins, arteries and blood transport substances around the body.</p> <p>Can explain the function of the heart using key words - ventricle, atrium, blood, valve, oxygenated, deoxygenated</p> <p>Can explain the function of the lungs using key vocabulary - muscles, contract, expands, relax, shrink, diaphragm.</p> <p>Can explain how the lungs work using key</p>
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		Can explain what happens to your heart rate and breathing after exercise (e.g. gets faster)		<p>Know that oxygen is absorbed into the blood through the air sacs.</p> <p>Know that blood vessels include arteries, capillaries and veins.</p> <p>Know that the heart, blood and blood vessels make up the circulatory system.</p> <p>Can explain how regular exercise benefits the heart and lungs, giving some examples.</p>	<p>words - trachea, bronchi, air sacs.</p> <p>Can explain the function of air sacs.</p> <p>Can explain what blood vessels do using arteries, capillaries and veins.</p> <p>Can describe the role of the heart, blood and blood vessels in the circulatory system.</p> <p>Can explain how regular exercise benefits the circulatory system giving several examples.</p>
<u>Subject specific skills</u>	<p>Is able to point to or match a main feature of the body.</p> <p>Is able to identify an organ from a choice of two .</p> <p>Is able to point to or match different parts of the digestive system when given the name.</p> <p>Is able to use symbols to label models.</p>	<p>Is able to label a human body map using a choice of symbols.</p> <p>Is able to name some of the major organs i.e. heart, lung.</p> <p>Is able to label the parts of the digestive system and match the parts to their function.</p> <p>Is able to move a specified body part.</p> <p>Is able to label diagrams and models.</p>	<p>Is able to label a human body map.</p> <p>Is able to name major organs.</p> <p>Is able to explain that food is digested once eaten.</p> <p>Is able to label the parts of the digestive system and identify their functions.</p> <p>Is able to move 3 specified body parts in sequence.</p>	<p>Is able to label a human body map and explain some of the functions of body parts.</p> <p>Is able to name major organs and locate them on the body.</p> <p>Is able to explain that digestion is the process of food being broken down.</p> <p>Is able to label the parts of the digestive system and explain their functions.</p>	<p>Is able to label a human body map and explain the functions of different parts of the body.</p> <p>Is able to name the major organs, some of the functions and locate them on the body.</p> <p>Is able to move 5 specified body parts in sequence.</p> <p>Is able to explain the process of digestion.</p>

	<p>Is able to follow demonstrations to build a model.</p> <p>Is able to perform different exercises.</p> <p>Is able to identify if your heart is beating fast or slow.</p> <p>Is able to follow a set of demonstrations to carry out a simple investigation.</p>	<p>Is able to follow a picture method to build a model.</p> <p>Is able to perform several exercises.</p> <p>Is able to observe and identify changes to heart rate.</p> <p>Is able to make a prediction from a choice of 3 using symbols.</p> <p>Is able to follow a picture method to carry out a simple investigation.</p> <p>Is able to identify one thing that has changed when completing a fair test.</p> <p>Identifies the correct result in a table.</p>	<p>Is able to label diagrams and models.</p> <p>Is able to follow a word and picture method to build a model.</p> <p>Is able to perform a sequence of exercises.</p> <p>Is able to observe changes to heart rate.</p> <p>Is able to measure heart rate.</p> <p>Is able to follow a word and picture method to carry out a simple investigation.</p> <p>Is able to suggest what to change when completing a fair test.</p> <p>Is able to record results in a simple table.</p> <p>Analyses results in the form of tables, simple bar graphs and a brief descriptions using key words or sentence blanks.</p>	<p>Is able to move 4 specified body parts in sequence.</p> <p>Is able to label a human body map and explain some of the functions of body parts.</p> <p>Is able to link features to a sense.</p> <p>Is able to name major organs and locate them on the body. Can name and describe different sounds.</p> <p>Is able to move 4 specified body parts in sequence.</p> <p>Is able to identify and describe tastes.</p> <p>Is able to identify dark and light and describe how it happens.</p> <p>Is able to make a prediction linked to their investigation.</p> <p>Is able to follow a written set of instructions to carry</p>	<p>Is able to name and explain the functions of each part of the digestive system by creating a flow diagram.</p> <p>Is able to label a human body map and explain the functions of different parts of the body.</p> <p>Is able to link all features to a sense and explain why we need senses.</p> <p>Is able to name the major organs, some of the functions and locate them on the body.</p> <p>Is able to name and describe a range of different sounds.</p> <p>Is able to move 5 specified body parts in sequence.</p> <p>Is able to identify and describe in detail tastes.</p> <p>Is able to identify and explain how to get light or dark and can use objects with high</p>
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				<p>out a simple investigation.</p> <p>Is able to explain why their investigation included a fair test.</p> <p>Is able to record results in a suitable table.</p> <p>Is able to record results in the form of a simple bar graph.</p> <p>Analyses results in the form of tables, simple bar graphs and a brief description.</p>	<p>contrast and/or reflective surfaces and the light-room to focus and use vision purposefully.</p> <p>Is able to make predictions.</p> <p>Is able to follow a written set of instructions to carry out a simple investigation.</p> <p>Is able to design an experiment to include a fair test.</p> <p>Is able to record results in a suitable table.</p> <p>Analyses results in the form of tables, simple bar graphs and a brief description.</p> <p>Is able to draw conclusions from their results.</p>
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<p><u>Suggested Activities</u></p>	<p>Body Parts & Organs</p> <ul style="list-style-type: none"> • What parts do they know already? Either ask pupils to point and name parts of their body or teacher points to parts on his/her body and asks pupils to name them. • Give body outlines to draw on and name. • Discuss what might be inside the body. Ask children to draw what they think is inside their body. • Make jigsaws from pictures of people cut up. • Draw monsters with e.g. 3 legs, 6 arms, 5 eyes etc. – this could be teacher directed or one child to another. • Look at the different organs in the body and their function.
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	<ul style="list-style-type: none"> • Label the different organs on dolls or pictures. <p>Digestion & Teeth</p> <ul style="list-style-type: none"> • Labelling the digestive system • Functions of the digestive system. • Explore how food moves through the digestive system. • Compare to animals digestive systems • Label the different teeth. • Explore how saliva works in breaking down food. • Compare our teeth to animal teeth. <p>The Skeleton & Muscles</p> <ul style="list-style-type: none"> • Look at how well they can move particular body parts e.g. move one finger at a time, wiggle their ears. • Label the model skeleton with the different bones. • Label diagrams of a skeleton. • Research the 4 main jobs of the skeleton. • Match bones to the different organs that they protect. • Learn how muscles move bones. • Explore how antagonistic muscles work when moving an arm. <p>Heart, Lungs & The Circulatory System</p> <ul style="list-style-type: none"> • Label the parts of the heart. • Explain how the heart work. • Label the parts of the lungs. • Explain how the lungs work. • Explain how the circulatory system works by using knowledge of the lungs and heart. • Create a fact file about the circulatory system. • Look at the augmented reality of the heart, lungs and circulatory system. • Look at how blood moves around the body. • Look at how exercise benefits the heart and the lungs. • Create a poster or presentation about how exercise benefits the body.
<p><u>Possible Investigations/ Working Scientifically</u></p>	<p>Body Parts & Organs</p> <ul style="list-style-type: none"> • Whose hand holds the most? Discussion to decide how to do this. • Devise own eye test. Which colours show up best? Can they see better with one eye. <p>Digestion & Teeth</p> <ul style="list-style-type: none"> • Explore the digestive system practically e.g. moving food through tights, crushing food in a bag to represent the stomach. • Look at how to clean your teeth using eggs – see resource folder.

	<p>The Skeleton & Muscles</p> <ul style="list-style-type: none"> • Make a model of the arm with elastic bands to show how muscles and bones work together – observe and explain what happened. <p>Heart, Lungs & The Circulatory System</p> <ul style="list-style-type: none"> • Build a model of the heart and observe what happens. • Build a model of the lungs and observe what happens. • Investigate how exercise can affect heart rate. • Investigate which form of exercise causes your heart to beat faster. • Use a spirometer to measure the volume of your lungs – Investigation: Do taller people have bigger lung volume than shorter people?
<p><u>Personal development</u></p>	<p><u>Problem solving</u> <u>Investigations and matching exercises</u> <u>Communication skills</u> <u>Working as pairs in investigations, asking and answering questions</u> <u>Self-belief</u> <u>Learning new skills, practising them and demonstrating them.</u> <u>Self-management</u> <u>Working with new equipment</u> <u>Teamwork</u> <u>Working as groups to solve problems or find out new information</u></p>
<p><u>Online resources</u> Twinkl CLEAPPS for risk assessments BBC bitesize for video resources. Resources folder on the school server. https://www.famousscientists.org/top-biologists/</p>	
<p><u>Evidencing Work</u> All work / evidence sheets need to be printed off (where appropriate levelled in accordance with the rubric), students need to self-assess and work needs to be put in student folders.</p>	

RRS Articles:

This unit of work is linked to Articles of the UN Convention on the Rights of the Child.

Article 13 (freedom of expression)

Article 24 (health and health services)

Article 29 (goals of education)