

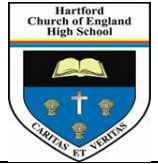
Long Term Plan (Year 7 Biology)



Year 7 Intent / End Point: Students will develop a strong foundation in the basic systems of both plants and animals as laid out in the “Big Ideas in Biology” (as outlined on the Learning Journey), Starting with cells and organs they will go on to systems including the skeletal and muscular system. They will use their knowledge of cells to describe the process of reproduction, and will also study the changes that occur during adolescence. Their last topic will look at ecology and allow students to assess the impact of human activity and the importance of biodiversity.

	<u>Phase 1- HT1 & HT2</u>		<u>Phase 2 - HT3/HT4</u>	<u>Phase 3 - HT5/HT6</u>
<u>Unit title</u>	<u>7A Cells, Tissues and Organ Systems</u>	<u>7C Muscles and Bones</u>	<u>7B Sexual Reproduction</u>	<u>7D Ecosystems</u>
Subject Knowledge	<ul style="list-style-type: none"> cells as fundamental unit of living organisms function of cell organelles similarities and differences between plant and animal cells hierarchical organisation of multicellular organisms 	<ul style="list-style-type: none"> the structure and functions of the gas exchange system in humans and the mechanism of breathing the structure and functions of the human skeleton the function of muscles the impact of exercise 	<ul style="list-style-type: none"> describe the life process of reproduction in some plants and animals describe the changes as humans develop to old age 	<ul style="list-style-type: none"> Interdependence including food webs organisms and the environment including bioaccumulation variation between and within species importance of biodiversity
Working Scientifically	Students learn to use a light microscope correctly, identify mistakes and follow multiple steps to set up and use a slide	Students perform practicals that allow them to make careful observations, draw a conclusion and suggest criteria to be used in evaluations.	Students learn how to write a Scientific Method and make predictions using scientific hypotheses	Students learn to present data as frequency diagrams, scatter graphs, bar charts. They learn that in an experiment, one variable is usually changed and another is measured
Literacy and Numeracy	Students learn to divide written information into given sections (for an investigation report). and explain why internationally agreed symbols and conventions are necessary in science. Students will practise calculating magnification and using SI units of measurement	Students need to understand that information can be presented in different ways to communicate scientific ideas clearly. Students will be given the opportunity to collect data and decide on the most appropriate methods of presentation	Students will identify key points in a text and develop clear points in order to present ideas and opinions (using structured note-taking methods). Students should use tables to spot patterns	Students work to develop clear paragraphs in order to present ideas and opinions (using ideas about structuring a paragraph to make a point).
Middle Stake Testing	End of unit test 7A Purposeful Practice (Try now)	End of Unit Test 7C Purposeful Practice (Try now)	End of Unit Test 7B Purposeful Practice (Try now)	End of Unit Test 7D Purposeful Practice (Try now)
High Stake Testing			Assessment 1	End of Year Assessment
Skills development	From the start of Year 7, students will steadily grow in confidence when using mathematical skills, thinking scientifically and communicating their ideas clearly and logically.			

Long Term Plan (Year 8 Biology)



Year 8 Intent / End Point: Students will build on the “Big Ideas in Biology” (as outlined on the Learning Journey). They will look in more detail at some of the organ systems discovered in Year 7, namely the digestive system, plant reproductive system, respiratory and circulatory systems. They will also build on their studies of the reproductive system by looking at inheritance, linking it to ideas of evolution.

Phase 1 - HT1&HT2

Phase 2 - HT3 & HT4

Unit title

8A Food and Nutrition and 8D Unicellular Organisms

8B Plants and their reproduction and 9B Photosynthesis

8C Breathing and Respiration

9A Genetics and Evolution

Subject Knowledge

- Components of a healthy diet
- Parts of the digestive system
- 5 kingdoms of classification and unicellular organisms
- The carbon cycle and decay

- Classifying plants
- Parts of flower and pollination
- Sexual and asexual reproduction
- Photosynthesis

- Aerobic and anaerobic respiration
- Breathing and gas exchange in water and by plants.
- Effect of exercise.
- Means and ranges. Cause and effect.

- Natural selection and evolution
- Environmental and inherited variation linked to continuous and discontinuous variation.
- Discovery of DNA by Watson and Crick
Genes, extinction, and biodiversity

Working Scientifically

Students should carry out observations regarding food tests and form conclusions about the nutritional content of food
Students will use formulae to calculate the area of a rectangle and a cuboid and relate to the microvilli

Students will learn to use the terms estimate, sample and accuracy.
Students will also plan an appropriate sample size and use a sample to calculate an estimate of population size.

Students investigate the effect of exercise on breathing and heart rate and use the data to explain why data with a small range is of good quality, calculate means and identify anomalous results in data.

Students will use scientific data regarding continuous variation to describe what probability is. They will then calculate and interconvert probabilities between different forms (percentage, decimal, fraction).

Literacy and Numeracy

Students will interpret and manipulate data from food labels
Students will use vocabulary to add weight to arguments, to create bias and distinguish between points that are supported by evidence and those that are not.

Students will develop their scientific writing to include clear paragraphs with a topic sentence, supporting sentences and summary techniques and develop unity, cohesion, and order in paragraph writing.
Students will estimate population size.

Students will calculate means and remove anomalous results.
Students will distinguish between facts and opinions and develop logical sequences of points in writing (e.g. by using words that show cause and effect).

Students will calculate probability.
Students will construct convincing and balanced arguments (taking account of different viewpoints to make counter-arguments).

Middle Stake Testing

End of Unit Test 8A
Purposeful Practice (Try now)

End of Unit Test 8B
Purposeful Practice (Try now)

End of Unit Test 8C
Purposeful Practice (Try now)

End of Unit Test 9A
Purposeful Practice (Try now)

High Stake Testing

Assessment 1

End of Year Assessment

Skills development

Students will continue to develop confidence in mathematical skills, thinking scientifically and communicating their ideas clearly and logically.

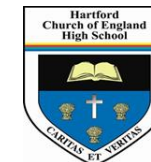


Long Term Plan (Year 9 Biology)

Year 9 Intent / End Point: Pupils will continue to study part of each of the “Big Ideas in Biology” (as outlined on the Learning Journey). Beginning with a study of the microscopic world they will go onto study biological molecules, their interaction with cells and their role in helping to maintain biological processes. This completes the coverage of the National Curriculum and overlaps with the Biology GCSE. Pupils will learn how to tackle 6 mark questions on a GCSE paper.

	<u>Phase 1 - HT1/HT2/HT3</u>			<u>Phase 2 - HT4/HT5/HT6</u>		
<u>Unit title</u>	<u>SB1 - Key Concepts in Biology</u>			<u>SB2 - Cells and control</u>		
Subject Knowledge	This unit introduces some of the central ideas in Biology, including ideas about cells, microscopy, enzymes, nutrition, diffusion, osmosis and active transport			This unit introduces how plants and animals develop from single cells the size of full stops to become complex organisms made of many different types of cells, which all need to be controlled and coordinated.		
Working Scientifically	Core Practical - Investigate biological specimens using microscopes, including magnification calculations and labelled scientific drawings from observations. Core Practical - Investigate the factors that affect enzyme activity Core Practical - Investigate osmosis in potatoes			Microscopy - know how to prepare root squash slides and observe under microscope Testing reflexes - Ruler drop Analysing data on neurone speeds		
Literacy and Numeracy	Make order of magnitude calculations, magnification calculations Recognise and use expressions in standard form Recognise and use expressions in decimal form. Use ratios, fractions and p Find arithmetical means. Construct and interpret frequency tables and diagrams, bar charts and histograms. Translate information between graphical and numerical form. Draw and use the slope of a tangent to a curve as a measure of rate of change. Use percentages. Find arithmetic means. Translate information between graphical and numeric forms.			Use ratios, fractions and percentages. Understand the term median. Translate information between graphical and numeric form. Construct and interpret frequency tables and diagrams, bar charts and histograms. Substitute numerical values into algebraic equations using appropriate units for physical quantities. Understand that $y = mx + c$ represents a linear relationship. Translate information between graphical and numeric form.		
Middle Stake Testing	6 Mark Q - Preparing a microscope slide	6 Mark Q - Enzymes core practical	6 Mark Q - Osmosis End of Unit Test SB1	6 Mark Q - Brain injury diagnosis and treatment	6 Mark Q - Stem Cells	End of Unit Test SB2
High Stake Testing				Assessment 1	End of Year Assessment	
Skills development	Students will develop a range of scientific vocabulary linked to the topics studied. They will continue to develop their practical skills, confidently identifying variables, analysing data and using mathematical skills such as probability. Exam questions will be used in all lessons to build confidence in exam technique.					

Long Term Plan (Year 10 Combined Biology)



Year 10 Intent / End Point: Pupils will continue to study part of each of the “Big Ideas in Biology” (as outlined on the Learning Journey). Beginning by revisiting inheritance and genetics, students will look in more detail at how DNA provides the blue print for life. They will then go on to study evolution and natural selection, then look at a range of communicable and non-communicable diseases. Finally they will look at plants and how to optimise their growth. Core Practicals will allow students to build confidence in planning and analysing. The topics will be underpinned by purposeful practice, with retrieval focussing on prior topics to help with long term recall.

Phase 1 - HT1 & HT2

Phase 2 - HT3 & HT4

Phase 3 - HT5 & HT6

Unit title

CB3 Genetics

CB4 Natural Selection

CB5 - Health, Disease and Medicines

CB6 - Plant Structures and Their Functions

Subject Knowledge

This unit introduces you to DNA code that produces our features and the processes that allow features to be passed on from parents to their offspring.

This unit introduces you to how organisms are changed genetically by natural selection and by humans, and its impact on agriculture.

This unit will help you define health, learn about some pathogens and the diseases they cause, medicines and about the immune system.

This unit will help you learn about the process of photosynthesis and its importance, how plant structures are adapted to their functions and how water, mineral ions and sugar are transported through plants.

Working Scientifically

Explain how DNA can be extracted from fruit

Make observations and draw conclusions to explain evidence of evolution

Know how to grow a biological culture using aseptic technique

Investigate the effect of light intensity on the rate of photosynthesis.
Demonstrate an understanding of rate calculations for transpiration.

Literacy and Numeracy

Use ratios, fractions and percentages.
Construct and interpret frequency tables and diagrams, bar charts and histograms.
Understand simple probability.
Understand the terms mean, mode and median.

Recognise and use numbers in decimal form. Use ratios, fractions and percentages.
Construct and interpret frequency tables and diagrams, bar charts and histograms.

Construct and interpret frequency tables and diagrams, bar charts and histograms.
Understand the principles of sampling as applied to scientific data.
Use a scatter diagram to identify a correlation between two variables.
Translate information between graphical and numeric form.
Plot two variables from experimental or other data.
Recognise and use expressions in decimal form.
Use percentages.

Understand the principles of sampling as applied to scientific data.
Understand the terms mean, mode and median.
Use a scatter diagram to identify a correlation between two variables.
Translate information between graphical and numerical form.
Understand that $y = mx + c$ represents a linear relationship.
Plot two variables from experimental or other data.
Determine the slope and intercept of a linear graph.

Middle Stake Testing

6 Mark Q - DNA

End of Unit Test CB3

6 Mark Q Selective Breeding v Genetic Modification
End of Unit Test CB4

6 Mark Q - Testing Antibiotics

End of Unit Test CB5

6 Mark Q - Core Practical Plan
End of Unit Test CB6

High Stake Testing

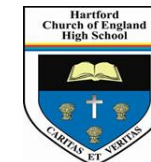
Assessment 1

End of Year Assessment

Skills development

Students will develop a range of scientific vocabulary linked to the topics studied. They will continue to develop their practical skills, confidently identifying variables, analysing data, using mathematical skills such as probability. Exam questions will be used in all lessons to build confidence in exam technique.

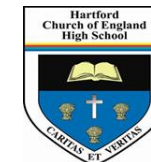
Long Term Plan (Year 10 Separate Biology)



Year 10 Intent / End Point: Pupils will continue to study part of each of the “Big Ideas in Biology” (as outlined on the Learning Journey). Beginning by revisiting inheritance and genetics, students will look in more detail at how DNA provides the blue print for life. They will then go on to study evolution and natural selection, then look at a range of communicable and non-communicable diseases. Finally they will look at plants and how to optimise their growth. Core Practicals will allow students to build confidence in planning and analysing. The topics will be underpinned by purposeful practice, with retrieval focussing on prior topics to help with long term recall.

	<u>Phase 1 - HT1 & HT2</u>		<u>Phase 2 - HT3 & HT4</u>		<u>Phase 3 - HT5 & HT6</u>	
<u>Unit title</u>	<u>SB3 Genetics</u>		<u>SB4 Natural Selection</u>	<u>SB5 - Health, Disease and Medicines</u>		<u>SB6 - Plant Structures and Their Functions</u>
Subject Knowledge	This unit introduces you to DNA code that produces our features and the processes that allow features to be passed on from parents to their offspring. In addition they will study the process of protein synthesis and the of Gregor Mendel.		This unit introduces you to how organisms are changed genetically by natural selection and by humans, and its impact on agriculture. They will also look at the evidence for divergent evolution	This unit will help students to define health, learn about some pathogens and the diseases they cause, medicines and about the immune system. They will also look at the lifecycles of viruses, the impact of diseases in plants and investigate the uses of monoclonal antibodies		This unit will help you learn about the process of photosynthesis and its importance, how plant structures are adapted to their functions and how water, mineral ions and sugar are transported through plants. They will also investigate extremophiles and look at the effects of plant hormones.
Working Scientifically	Explain how DNA can be extracted from fruit		Make observations and draw conclusions to explain evidence of evolution	Know how to grow a biological culture using aseptic technique		Investigate the effect of light intensity on the rate of photosynthesis. Demonstrate an understanding of rate calculations for transpiration.
Literacy and Numeracy	Use ratios, fractions and percentages. Construct and interpret frequency tables and diagrams, bar charts and histograms. Understand simple probability. Understand the terms mean, mode and median.		Recognise and use numbers in decimal form. Use ratios, fractions and percentages. Construct and interpret frequency tables and diagrams, bar charts and histograms.	Construct and interpret frequency tables and diagrams, bar charts and histograms. Understand the principles of sampling as applied to scientific data. Use a scatter diagram to identify a correlation between two variables. Translate information between graphical and numeric form. Plot two variables from experimental or other data. Recognise and use expressions in decimal form. Use percentages.		Understand the principles of sampling as applied to scientific data. Understand the terms mean, mode and median. Use a scatter diagram to identify a correlation between two variables. Translate information between graphical and numerical form. Understand that $y = mx + c$ represents a linear relationship. Plot two variables from experimental or other data. Determine the slope and intercept of a linear graph.
Middle Stake Testing	6 Mark Q - DNA	End of Unit Test SB3	6 Mark Q Selective Breeding v Genetic Modification End of Unit Test SB4	6 Mark Q - Testing Antibiotics	End of Unit Test SB5	6 Mark Q - Core Practical Plan End of Unit Test SB6
High Stake Testing			Assessment 1			End of Year Assessment
Skills development	Students will develop a range of scientific vocabulary linked to the topics studied. They will continue to develop their practical skills, confidently identifying variables, analysing data, using mathematical skills such as probability. Exam questions will be used in all lessons to build confidence in exam technique.					

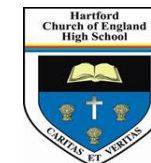
Long Term Plan (Year 11 Combined Biology)



Year 11 Intent / End Point: Pupils will continue to study part of each of the “Big Ideas in Biology” (as outlined on the Learning Journey). Beginning with looking at homeostasis and the endocrine system, they will go on to study gas exchange and circulation before finishing with a study of ecosystems and the human impact on them. They will then prepare for their final GCSE assessments. The topics will be underpinned by purposeful practice, with retrieval focussing on prior topics to help with long term recall.

	<u>Phase 1 - HT1 & HT2</u>		<u>Phase 2 - HT3 & HT4</u>		<u>Phase 3 - HT5 & HT6</u>	
<u>Unit title</u>	<u>SB7 Coordination and Control</u>	<u>SB8 Exchange and Transport</u>	<u>SB9 - Ecosystems and Material Systems</u>	<u>EXAM PREPARATION</u>		
Subject Knowledge	This unit introduces students to hormones, metabolic rate, the menstrual cycle, blood glucose and diabetes.	This unit introduces diffusion, different kinds of respiration, how the lungs are adapted to their functions, and calculating cardiac output.	This unit introduces ecosystems, abiotic and biotic factors and communities, parasitism, biodiversity, and the water, carbon and nitrogen cycles.			
Working Scientifically	Evaluate the correlation between body mass and type 2 diabetes including waist : hip calculations and BMI, using the BMI equation: BMI = weight (kg) ÷ (height (m)) ²	Core Practical: Investigate the rate of respiration in living organisms.	Core Practical: Investigate the relationship between organisms and their environment using field-work techniques, including quadrats and belt transects.			
Literacy and Numeracy	Recognise and use expressions in standard form. Construct and interpret frequency tables and diagrams, bar charts and histograms. Translate information between graphical and numeric form. Plot two variables from experimental or other data.	Recognise and use expressions in decimal form. Use ratios, fractions and percentages. Calculate areas of triangles and rectangles, surface areas and volumes of cubes Recognise and use expressions in decimal form. Recognise and use expressions in standard form. Use ratios, fractions and percentages. Make order of magnitude calculations.	Use ratios, fractions and percentages. Construct and interpret frequency tables and diagrams, bar charts and histograms. Understand the principles of sampling as applied to scientific data. Use ratios, fractions and percentages. Understand the principles of sampling as applied to scientific data.			
Middle Stake Testing	6 Mark Q - Hormones and IVF End of Unit Test CB7	Core Practical - 6 Mark Q End of Unit Test CB8	Core Practical - 6 Mark Q End of Unit Test CB9			
High Stake Testing	Mock 1		Mock 2			
Skills development	Students will develop a range of scientific vocabulary linked to the topics studied. They will continue to develop their practical skills, confidently identifying variables, analysing data, using mathematical skills such as probability. Exam questions will be used in all lessons to build confidence in exam technique.					

Long Term Plan (Year 11 Separate Biology)



Year 11 Intent / End Point: Students will continue to study part of each of the “Big Ideas in Biology” (as outlined on the Learning Journey). Beginning with looking at homeostasis and the endocrine system, they will go on to study gas exchange and circulation before finishing with a study of ecosystems and the human impact on them. They will then prepare for their final GCSE assessments. The topics will be underpinned by purposeful practice, with retrieval focussing on prior topics to help with long term recall.

	<u>Phase 1 - HT1 & HT2</u>		<u>Phase 2 - HT3 & HT4</u>	<u>Phase 3 - HT5 & HT6</u>		
<u>Unit title</u>	<u>SB7 Coordination and Control</u>	<u>SB8 Exchange and Transport</u>	<u>SB9 - Ecosystems and Material Systems</u>	<u>EXAM PREPARATION</u>		
Subject Knowledge	This unit introduces hormones, metabolic rate, the menstrual cycle, blood glucose and diabetes. Students will also study osmoregulation and the role of the kidney	This unit introduces diffusion, different kinds of respiration, how the lungs are adapted to their functions, and calculating cardiac output. They will also look at how Ficks Law explains the factors affecting rate of diffusion.	This unit introduces ecosystems, abiotic and biotic factors and communities, parasitism, biodiversity, and the water, carbon and nitrogen cycles. They will also look at how scientists use indicator species as indicators of pollution and look at issues of food security.			
Working Scientifically	Evaluate the correlation between body mass and type 2 diabetes including waist : hip calculations and BMI, using the BMI equation: $BMI = \text{weight (kg)} \div (\text{height (m)})^2$	Core Practical: Investigate the rate of respiration in living organisms.	Core Practical: Investigate the relationship between organisms and their environment using field-work techniques, including quadrats and belt transects.			
Literacy and Numeracy	Recognise and use expressions in standard form. Construct and interpret frequency tables and diagrams, bar charts and histograms. Translate information between graphical and numeric form. Plot two variables from experimental or other data.	Recognise and use expressions in decimal form. Use ratios, fractions and percentages. Calculate areas of triangles and rectangles, surface areas and volumes of cubes. Recognise and use expressions in decimal form. Recognise and use expressions in standard form. Use ratios, fractions and percentages. Make order of magnitude calculations.	Use ratios, fractions and percentages. Construct and interpret frequency tables and diagrams, bar charts and histograms. Understand the principles of sampling as applied to scientific data. Use ratios, fractions and percentages. Understand the principles of sampling as applied to scientific data.			
Middle Stake Testing	6 Mark Q - Hormones and IVF End of Unit Test SB7	Core Practical - 6 Mark Q End of Unit Test SB8	Core Practical - 6 Mark Q End of Unit Test SB9			
High Stake Testing	Mock 1		Mock 2			
Skills development	Students will develop a range of scientific vocabulary linked to the topics studied. They will continue to develop their practical skills, confidently identifying variables, analysing data, using mathematical skills such as probability. Exam questions will be used in all lessons to build confidence in exam technique.					