

AQA GCSE Biology – Year 10 Curriculum Map



**Notre Dame
Catholic College**

	Autumn Term 1 and 2	Spring Term 1 and 2	Summer Term 1
Curriculum Content	<p>Composite: Know how the body is organised and how we transports substances throughout the body.</p> <p>Component 1 :</p> <ul style="list-style-type: none"> Know how to categorise cells, tissues, organs and systems in terms of size and function <p>Component 2:</p> <ul style="list-style-type: none"> Know the the role of enzymes to Metabolism. Students should be able to describe the nature of enzyme molecules and relate their activity to temperature and pH changes Students should be able to use other models to explain enzyme action. <p>Required practical activity 3: use qualitative reagents to test for a range of carbohydrates, lipids and proteins.</p> <p>Required practical activity 4: investigate the effect of pH on the rate of reaction of amylase enzyme.</p> <p>Component 3:</p> <ul style="list-style-type: none"> Students should know the structure and functioning of the human heart and lungs, including how lungs are adapted for gaseous exchange Students should be able to explain how the structure of these vessels relates to their functions Students should be able to use simple compound measures such as rate and carry out rate calculations for blood flow. <p>Component 4:</p> <ul style="list-style-type: none"> Students should be able to recognise different types of blood cells in a photograph or diagram, and explain how they are adapted to their functions. <p>Component 5:</p> <ul style="list-style-type: none"> Students should be able to evaluate the advantages and disadvantages of treating cardiovascular diseases by drugs, mechanical devices or transplant. <p>Component 6:</p> <ul style="list-style-type: none"> Students should be able to describe the relationship between health and disease and the interactions between different types of disease. Students should be able to translate disease incidence information between graphical and numerical forms, construct and interpret frequency tables and diagrams, bar charts and histograms, and use a scatter diagram to identify a correlation between two variables. <p>Component 7:</p> <ul style="list-style-type: none"> Discuss the human and financial cost of these non-communicable diseases to an individual, a local community, a nation or globally Explain the effect of lifestyle factors including diet, alcohol and smoking on the incidence of non-communicable diseases at local, national and global levels. <p>Component 8:</p> <ul style="list-style-type: none"> Students should be able to describe cancer as the result of changes in cells that lead to uncontrolled growth and division. <p>Component 9:</p> <ul style="list-style-type: none"> Students should be able to explain how the structures of plant tissues are related to their functions <p>Component 10:</p>	<p>Composite: Know how we can avoid diseases by reducing contact with them, as well as how the body uses barriers against pathogens.</p> <p>Component 1:</p> <ul style="list-style-type: none"> Know how diseases caused by viruses, bacteria, protists and fungi are spread in animals and plants. Students should be able to explain how the spread of diseases can be reduced or prevented. <p>Component 2:</p> <ul style="list-style-type: none"> Explore different viral diseases and how they are transmitted such as Measles, HIV and Tobacco Mosaic Virus. <p>Component 3:</p> <ul style="list-style-type: none"> Explore different bacterial diseases and how they are transmitted such as salmonella and Gonorrhoea. <p>Component 4:</p> <ul style="list-style-type: none"> Explore fungal diseases and how they are transmitted such as rose black spot. <p>Component 5:</p> <ul style="list-style-type: none"> Explore a protist disease such as Malaria and how it is transmitted . <p>Component 6:</p> <ul style="list-style-type: none"> Students should be able to describe the non-specific defence systems of the human body against pathogens. Students should be able to explain the role of the immune system in the defence against disease. <p>Component 7:</p> <ul style="list-style-type: none"> Students should be able to explain how vaccination will prevent illness in an individual, and how the spread of pathogens can be reduced by immunising a large proportion of the population. <p>Component 8:</p> <ul style="list-style-type: none"> Students should be able to explain the use of antibiotics and other medicines in treating disease. <p>Component 9:</p> <ul style="list-style-type: none"> Students should be able to describe the process of discovery and development of potential new medicines, including preclinical and clinical testing. 	<p>Composite: Know how plants harness the Sun’s energy in photosynthesis in order to make food.</p> <p>Component 1:</p> <ul style="list-style-type: none"> Know what the chemical symbols: CO₂, H₂O, O₂ and C₆H₁₂O₆ stand for Students should know photosynthesis is an endothermic reaction in which energy is transferred from the environment to the chloroplasts by light <p>Component 2:</p> <ul style="list-style-type: none"> Students should be able to explain the effects of temperature, light intensity, carbon dioxide concentration, and the amount of chlorophyll on the rate of photosynthesis. Students should be able to: measure and calculate rates of photosynthesis, extract and interpret graphs of photosynthesis rate involving one limiting factor, plot and draw appropriate graphs selecting appropriate scale for axes, translate information between graphical and numeric form. Students should be able to explain graphs of photosynthesis rate involving two or three factors and decide which is the limiting factor. Students should understand and use inverse proportion – the inverse square law and light intensity in the context of photosynthesis. <p>Required practical activity 5: investigate the effect of light intensity on the rate of photosynthesis using an aquatic organism such as pondweed.</p> <p>Component 3:</p> <ul style="list-style-type: none"> Understand the uses of glucose from photosynthesis <p>Component 4:</p> <ul style="list-style-type: none"> Students should be able to describe cellular respiration as an exothermic reaction which is continuously occurring in living cells Students should be able to compare the processes of aerobic and anaerobic respiration with regard to the need for oxygen, the differing products and the relative amounts of energy transferred. <p>Composite 5:</p> <ul style="list-style-type: none"> Students should be able to investigate into the effect of exercise on the body. <p>Composite 6:</p> <ul style="list-style-type: none"> Students should be able to explain the importance of sugars, amino acids, fatty acids and glycerol in the synthesis and breakdown of carbohydrates, proteins and lipids.

	<ul style="list-style-type: none"> Students should be able to explain how the structure of root hair cells, xylem and phloem are adapted to their functions. Students should be able to explain the effect of changing temperature, humidity, air movement and light intensity on the rate of transpiration 		
Prior knowledge and skills (from previous year / key stage)	<ul style="list-style-type: none"> Students will have done the digestive system and touched on enzymes in KS3. Students will have touched on communicable and non-communicable diseases and how we treat disease using vaccinations. 	<ul style="list-style-type: none"> Students will have gone through health in KS3 when they looked at microbes and disease. Students will be able to apply their basic knowledge on transmission and defence barriers when looking at this topic in more detail. 	<ul style="list-style-type: none"> Students will have covered a basic over view of photosynthesis and respiration in KS3 Students will be familiar with tissues and organs required for processes from Component 4.2 Organisation
Core Knowledge Organiser content	Biology Topic 4.2: Digestion Enzymes Lock and key Structure of the heart Blood types Heart disease Treatment for heart disease.	Biology Topic 4.3: Viral structure Bacterial structure Fungal structure Protist structure Defence systems Vaccinations Examples of viral, bacterial and fungal diseases.	Biology Topic 4.3: Viral structure Bacterial structure Fungal structure Protist structure Defence systems Vaccinations Examples of viral, bacterial and fungal diseases.
Assessment Components	AO1: Demonstrate knowledge and understanding of: 1) scientific ideas 2) scientific techniques and procedures. AO2: Apply knowledge and understanding of: 1) scientific ideas 2) scientific enquiry, techniques and procedures AO3: Analyse information and ideas to: 1a) interpret 1b) evaluate 2a) make judgements 2b) draw conclusions 3a) develop experimental procedures 3b) improve experimental procedures.	AO1: Demonstrate knowledge and understanding of: 1) scientific ideas 2) scientific techniques and procedures. AO2: Apply knowledge and understanding of: 1) scientific ideas 2) scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: 1a) interpret 1b) evaluate 2a) make judgements 2b) draw conclusions 3a) develop experimental procedures 3b) improve experimental procedures.	AO1: Demonstrate knowledge and understanding of: 1) scientific ideas 2) scientific techniques and procedures. AO2: Apply knowledge and understanding of: 1) scientific ideas 2) scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: 1a) interpret 1b) evaluate 2a) make judgements 2b) draw conclusions 3a) develop experimental procedures 3b) improve experimental procedures.
Vocabulary / Key Subject Terminology	Metabolism Enzymes Protease Carbohydrase Lipase Lock and key Circulatory system White, red bloods Platelets Capillaries, veins, arteries. Temperature pH Rate	Virus Bacteria Fungus Protist Transmission Vaccination Defence Antibiotics	Photosynthesis Respiration Fermentation Rate Harness energy
Assessment 1	Teacher marked Extended Written task	Teacher marked Extended Written task	Teacher marked Extended Written task
Assessment 2	AO2 and AO3 Assessment task	AO2 and AO3 Assessment task	AO2 and AO3 Assessment task

Cross Curricular Links with other Faculties	Maths- Graph skills, equations, rearranging formulas English – Literacy skills, connectives, keywords and definitions	Maths- Graph skills, equations, rearranging formulas English – Literacy skills, connectives, keywords and definitions	Maths- Graph skills, equations, rearranging formulas English – Literacy skills, connectives, keywords and definitions
Extra-Curricular Offer	STEM club, Revision sessions (exam technique) University visits if possible to look at A'level courses.	STEM club, Revision sessions (exam technique) University visits if possible to look at A'level courses.	STEM club, Revision sessions (exam technique) University visits if possible to look at A'level courses.
Time Allocation	27 Lessons Approximate	9 Lessons Approximate	9 Lessons Approximate