



## Curriculum Map for Triple Science Biology Year 10

YEAR 10	Autumn 1	Autumn 2
<b>Topics</b>	<b>Organisation &amp; The Digestive System Organising Plants &amp; Animals</b>	<b>Health &amp; Disease</b>
<b>Substantive Knowledge – The Knowledge and Content Taught By The Teacher</b>	<ul style="list-style-type: none"><li>• Students will learn how tissues and organs link together to help the human body function as it does.</li><li>• They will look at the digestive system in particular detail and the chemistry of food.</li><li>• Students will learn about the blood, heart, breathing and gas exchange in the body and how these components help us to function.</li><li>• Students will learn that plants require good organisation too and we look at this in detail including transport systems in plants, evaporation and the process of moving water through the plant known as transpiration.</li></ul>	<ul style="list-style-type: none"><li>• Students will learn how health and disease effects the human body and how we can prevent infection. We focus in on key pathogens such as bacteria, viruses and fungi and how our body and modern medicine can combat these.</li></ul>
<b>Disciplinary Knowledge – The Knowledge Scientists Need So They Can Collect, Understand and Evaluate Scientific Evidence</b>	<ul style="list-style-type: none"><li>• Heart Disease and Developments of Treatment</li><li>• Prevention of Heart Disease</li></ul>	<ul style="list-style-type: none"><li>• Semmelweis and His Development of Preventing Infection</li><li>• COVID-19</li><li>• Importance of Aseptic Technique</li></ul>
<b>Skills</b>	<ul style="list-style-type: none"><li>• Using a variety of models such as representational, spatial, descriptive, computational and mathematical to solve problems, make predictions and to develop scientific explanations and understanding of familiar and unfamiliar facts.</li><li>• Evaluating risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences.</li><li>• Presenting observations and other data using appropriate methods.</li></ul>	<ul style="list-style-type: none"><li>• Explaining every day and technological applications of science; evaluate associated personal, social, economic and environmental implications; and make decisions based on the evaluation of evidence and arguments.</li><li>• Evaluating risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences.</li></ul>

<b>Links To Prior Learning</b>	<ul style="list-style-type: none"> <li>Years 7 and 8 cover the digestive system and its enzymes in brief detail.</li> </ul>	<ul style="list-style-type: none"> <li>Year 8 covers how to prevent infection.</li> </ul>
<b>Literacy/ Numeracy</b>	<ul style="list-style-type: none"> <li>Recognise and use expressions in decimal form.</li> <li>Recognise and use expressions in standard form.</li> <li>Use ratios, fractions and percentages.</li> <li>Make estimates of the results of simple calculations.</li> <li>Literacy - state and describe questions and how to approach them.</li> </ul>	<ul style="list-style-type: none"> <li>Recognise and use expressions in decimal form.</li> <li>Recognise and use expressions in standard form.</li> <li>Literacy - Experimental write ups, hypothesis and methods.</li> </ul>
<b>Cross Curricular</b>	<ul style="list-style-type: none"> <li>Food and Nutrition - How The Digestive System Works</li> <li>PHSCE - Non-Communicable Diseases</li> </ul>	<ul style="list-style-type: none"> <li>PSCHE - Relationships, Sex and Contraception</li> <li>Food and Nutrition - Lifestyle and Diet</li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li>Mid Topic Assessment - Tissues and Enzymes</li> </ul>	<ul style="list-style-type: none"> <li>Assessment on Organisation</li> </ul>

<b>YEAR 10</b>	<b>Spring 1</b>	<b>Spring 2</b>
<b>Topics</b>	<b>Preventing &amp; Treating Diseases</b>	<b>Non-Communicable Diseases</b>
<b>Substantive Knowledge – The Knowledge and Content Taught By The Teacher</b>	<ul style="list-style-type: none"> <li>Following on from the health and disease topic in the last term, students will look at modern medicine and how it helps us to prevent and treat diseases in detail.</li> <li>Students will learn about the vaccination process, antibiotics versus painkillers, discovering and developing drugs.</li> <li>Students will learn about the relatively new technology around monoclonal antibodies and how these can be used to treat diseases such as cancer.</li> </ul>	<ul style="list-style-type: none"> <li>Students will learn about diseases that cannot be transmitted through pathogens, known as non-communicable diseases.</li> <li>The students will learn about cancer but will also investigate smoking, diet and alcohol and how these impact on lifestyle and health.</li> </ul>
<b>Disciplinary Knowledge – The Knowledge Scientists Need So They Can Collect, Understand and Evaluate Scientific Evidence</b>	<ul style="list-style-type: none"> <li>Development of Vaccines</li> <li>Lateral Flow Tests</li> <li>Pregnancy Test Development</li> </ul>	<ul style="list-style-type: none"> <li>Development of Cancer Treatments</li> <li>Prevention of Diseases Through Lifestyle Changes</li> </ul>
<b>Skills</b>	<ul style="list-style-type: none"> <li>Explaining every day and technological applications of science; evaluate associated personal, social, economic and environmental implications; and make decisions based on the evaluation of evidence and arguments.</li> </ul>	<ul style="list-style-type: none"> <li>Evaluating risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences.</li> <li>Recognising the importance of peer review of results and of communicating results to a range of audiences.</li> </ul>

<b>Links To Prior Learning</b>	<ul style="list-style-type: none"> <li>Year 8 Looks at Human Defence Systems</li> </ul>	<ul style="list-style-type: none"> <li>Year 8 Looks at Drugs, Smoking and Alcohol</li> </ul>
<b>Literacy/ Numeracy</b>	<ul style="list-style-type: none"> <li>Use an appropriate number of significant figures.</li> <li>Find arithmetic means.</li> <li>Construct and interpret frequency tables and diagrams, bar charts and histograms.</li> <li>Understand the principles of sampling as applied to scientific data.</li> <li>Understand simple probability.</li> <li>Understand the terms mean, mode and median.</li> <li>Use a scatter diagram to identify a correlation between two variables.</li> <li>Make order of magnitude calculations.</li> <li>Literacy – keywords and experiment writeups.</li> </ul>	<ul style="list-style-type: none"> <li>Use an appropriate number of significant figures.</li> <li>Find arithmetic means.</li> <li>Construct and interpret frequency tables and diagrams, bar charts and histograms.</li> <li>Understand the principles of sampling as applied to scientific data.</li> <li>Understand simple probability.</li> <li>Understand the terms mean, mode and median.</li> <li>Use a scatter diagram to identify a correlation between two variables.</li> <li>Make order of magnitude calculations.</li> <li>Literacy – keywords and experiment writeups.</li> </ul>
<b>Cross Curricular</b>	<ul style="list-style-type: none"> <li>History - Development of Medicines</li> <li>PHSE - Vaccines and Antivax Debate</li> <li>Philosophy and Ethics - Links Between Arguments and Ethics</li> </ul>	<ul style="list-style-type: none"> <li>PE - Health and Exercise</li> <li>Food and Nutrition - Healthy Eating</li> <li>Geography - Access to Resources</li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li>Mid Topic Assessment - Pathogens</li> </ul>	<ul style="list-style-type: none"> <li>Assessment on Infection and Response</li> </ul>

<b>YEAR 10</b>	<b>Summer 1</b>	<b>Summer 2</b>
<b>Topics</b>	<b>The Human Nervous System</b>	<b>Hormonal Coordination</b>
<b>Substantive Knowledge – The Knowledge and Content Taught By The Teacher</b>	<ul style="list-style-type: none"> <li>Students will learn about the process of regulating the internal human environment, known as homeostasis.</li> <li>They will look into the nervous system and how our body performs reflex actions in specific events.</li> <li>They will link this topic into the brain and eye and how we can study these to predict and cure certain diseases.</li> </ul>	<ul style="list-style-type: none"> <li>Students will learn about homeostasis in more detail and how we control hormones and blood glucose levels.</li> <li>They will look at when this goes wrong with diabetes and how to treat it.</li> <li>Following on from this, students will learn about human reproduction and the hormones involved, as well as what is needed to help with infertility.</li> <li>Students will learn that plants also are controlled by hormones and various environmental responses and we look at this in more detail to show how farmers and the home gardener can use this to their advantage.</li> </ul>
<b>Disciplinary Knowledge – The Knowledge Scientists Need So They Can Collect, Understand and Evaluate</b>	<ul style="list-style-type: none"> <li>Development of studies of the brain, eye and nervous system.</li> <li>Discovery and treatment of diseases associated with the brain, eye and nervous system.</li> </ul>	<ul style="list-style-type: none"> <li>Development of treatments of diabetes over time and searching for a cure for Type 1 Diabetes.</li> <li>Control and development of fertility and its treatments - IVF and contraception methods.</li> </ul>

<b>Scientific Evidence</b>		
<b>Skills</b>	<ul style="list-style-type: none"> <li>• Appreciating the power and limitations of science and consider any ethical issues which may arise.</li> <li>• Explaining every day and technological applications of science; evaluate associated personal, social, economic and environmental implications; and make decisions based on the evaluation of evidence and arguments.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences.</li> <li>• Recognising the importance of peer review of results and of communicating results to a range of audiences.</li> <li>• Planning experiments or devise procedures to make observations, produce or characterise a substance, test hypotheses, check data or explore phenomena.</li> </ul>
<b>Links To Prior Learning</b>	<ul style="list-style-type: none"> <li>• The eye is covered in Year 7.</li> <li>• Specialised Cells - nerve cells, covered in Year 7.</li> </ul>	<ul style="list-style-type: none"> <li>• Year 8 looks at the different diseases and disorders that effect the body that can include diabetes.</li> </ul>
<b>Literacy/ Numeracy</b>	<ul style="list-style-type: none"> <li>• Use an appropriate number of significant figures.</li> <li>• Find arithmetic means.</li> <li>• Construct and interpret frequency tables and diagrams, bar charts and histograms.</li> <li>• Understand the principles of sampling as applied to scientific data.</li> <li>• Use a scatter diagram to identify a correlation between two variables.</li> </ul>	<ul style="list-style-type: none"> <li>• Use an appropriate number of significant figures.</li> <li>• Find arithmetic means.</li> <li>• Construct and interpret frequency tables and diagrams, bar charts and histograms.</li> <li>• Understand the principles of sampling as applied to scientific data.</li> <li>• Use a scatter diagram to identify a correlation between two variables.</li> <li>• Analysing hormone graphs in Menstrual Cycle.</li> <li>• Literacy - evaluation skills focussing on key parts of the topic. The development of ethical arguments and how to structure a for and against question.</li> </ul>
<b>Cross Curricular</b>	<ul style="list-style-type: none"> <li>• PE - Nervous System and Hand Eye Coordination</li> <li>• Physics - Eye Light and Refraction/ Lenses</li> <li>• Photography - Light and Eye</li> <li>• Medical Physics A-Level - Brain PET Scanners</li> </ul>	<ul style="list-style-type: none"> <li>• Health &amp; Social Care - Fertility</li> <li>• PSCHE - Health &amp; Drugs and Sex Education</li> <li>• Philosophy &amp; Ethics - Ethics of Birth Control</li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li>• Mid Topic Assessment on Homeostasis and Response</li> </ul>	<ul style="list-style-type: none"> <li>• Open Book Test on Topic in September of Year 11</li> </ul>