Biology Curriculum Overview – Year 9

Sequencing of topics	What knowledge will students develop? (Including key terminology)	What skills will students develop? (Including literacy & numeracy)	Assessment opportunities	Homework opportunities	Personal development (Ursuline Values, Catholic Social Teaching, Cultural Capital, Cross-curricular, Careers)	Curriculum links
Autumn Term 1						
Cell structure	○ Eukaryotes and prokaryotes ○ Animal and plant cells ○ Cell specialisation ○ Cell differentiation ○ Microscopy ○ Culturing microorganisms (Triple)	○ Use prefixes centi, milli, micro and nano and powers of ten for orders of magnitude ○ Express the answer in standard form. ○ Recognise, draw and interpret images of cells. ○ Images of cells in videos, bioviewers, photographs and micrographs can be used as comparison for students own drawings. ○ Calculate the number of bacteria in a population after a certain time if given the mean division time. - Calculate cross-sectional areas of colonies or clear areas around colonies using πr^2.	○ AFL in lessons and homework ○ Mid Topic assessment QWC ○ End of topic test-summative assessment	○ Differentiated worksheets ○ Flipped Learning ○ Badger assessed tasks ○ Neeto/satchel quizzes ○ YouTube videos with questions	○ **United in harmony** when we consider the wider uses of antibacterials ○ **Grateful** for the beauty in a cell and how it works ○ **Faith-filled and hopeful** when seeing beyond the naked eye ○ **Discerning and joyful** at the possibilities of science and medicine ○ **Leading others in pursuit of justice** when planning and carrying out a practical ○ **Service and sacrifice** when we recognise the scientific work that has been done before us ○ **Dignity of the human person** when considering healthcare	KS1/2 ○ Animal life cycles ○ Plant growth and health ○ Adaptation ○ Function of plant parts ○ Animal survival KS3 ○ Y7 Cells KS4 ○ Y10 Cell transport ○ Y10 photosynthesis ○ Y10 Homeostasis and the NS ○ Y10 Endocrine system ○ Y11 Digestive system ○ Y11 Circulatory system and NCD KS5

		○ Use 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. ○ use estimations to judge the relative size or area of sub-cellular structures ○ Understand how scientific methods and theories develop over time. ○ use simple compound measures of rate of water uptake			○ **Care for God's creation** ○ **Physical** ○ **Maths** ○ **Art** ○ **PE** ○ **History** ○ **Biologist** ○ **Biomedical Scientist** ○ **Teacher** ○ **Botanist** ○ **Research Scientist** ○ **Microbiologist**	○ Topic 1,2,3,6,7,8
Autumn Term 2						
Spring Term 1						
Cell Division and Transport	○ Chromosomes ○ Mitosis and the cell cycle ○ Stem cells ○ Diffusion ○ Osmosis ○ Active transport	○ Use models and analogies to develop explanations of how cells divide. ○ Evaluate the practical risks and benefits, as well as social and ethical issues, of the use of stem cells in	○ AFL in lessons and homework ○ Mid Topic assessment QWC ○ End of topic test-summative assessment	○ Differentiated worksheets ○ Flipped Learning ○ Badger assessed tasks ○ Neeto/satchel quizzes	○ **Grateful** for the beauty of a cell and awe filled when we learn about the cell cycle ○ **Faith-filled and hopeful** when seeing beyond the naked eye ○ **Discerning and joyful** at the	KS1/2 ○ Animal life cycles ○ Animal survival ○ Healthy human development ○ Genetic variation ○ Plant growth and health ○ Adaptation ○ Function of plant parts

		medical research and treatments. ○ Recognise, draw and interpret diagrams that model diffusion. ○ Use of isotonic drinks and high energy drinks in sport. ○ Recognise, draw and interpret diagrams that model osmosis. ○ Use 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. ○ Appreciate the power and limitations of science and consider any ethical issues which may arise.		○ YouTube videos with questions	possibilities of science and medicine ○ **Service and sacrifice** when we recognise the scientific work that has been done before us ○ **Dignity of the human person** when considering healthcare ○ **Loving and compassionate** when we consider how scientific advancements can be used to help others ○ **Grateful** for the beauty in a cell and how it works ○ **Leading others in pursuit of justice** when planning and carrying out a practical ○ **Care for God's creation** ○ **Call to family** ○ **Physical** ○ **Spiritual** ○ **Maths** ○ **PE** ○ **RE** ○ **Biologist** ○ **Biomedical Scientist** ○ **Teacher** ○ **Geneticist**	○ Nutrient transport in animals KS3 ○ Y7 Cells ○ Y Variation ○ Y7 Human reproduction ○ Y8 Inheritance KS4 ○ Y9 Cells ○ Y9 Digestive system ○ Y9 Circulatory system and NCD ○ Y10 photosynthesis ○ Y10 Homeostasis and the NS ○ Y10 Endocrine system KS5 ○ Topic 2, 3, 8

Spring Term 2						
Summer Term 1						
Organisation	○ Principles of organisation ○ The human digestive system ○ The heart and blood vessels ○ Blood ○ Coronary heart disease: a non-communicable disease ○ Health issues ○ The effect of lifestyle on some non-communicable diseases ○ Cancer ○ Plant tissues ○ Plant organ system	○ Students should be able to develop an understanding of size and scale in relation to cells, tissues, organs and systems. ○ -Students should be able to use other models to explain enzyme action. ○ Observing and drawing blood cells seen under a microscope. ○ Evaluate risks related to use of blood products. ○ Evaluate methods of treatment bearing in mind the benefits and risks associated with the treatment. ○ Students should be able to use direct proportion and simple ratios to express the outcome of a genetic cross ○ use simple compound measures of rate of water uptake	○ AFL in lessons and homework ○ Mid Topic assessment QWC ○ End of topic test- summative assessment	○ Differentiated worksheets ○ Flipped Learning ○ Badger assessed tasks ○ Neeto/satchel quizzes ○ YouTube videos with questions	○ **United in harmony** when we consider the importance of the digestive system in everyday life ○ **United in harmony** when we consider the impact of our NHS and the treatment they provide ○ **Grateful** for the beauty in a cell, tissue and system and how they work together ○ **Faith-filled and hopeful** when seeing beyond the naked eye ○ **Discerning and joyful** at the possibilities of science and medicine ○ **Leading others in pursuit of justice** when planning and carrying out a practical ○ **Service and sacrifice** when we recognise the scientific work that has been done before us ○ **Dignity of the human person** when	KS1/2 ○ Healthy human development ○ Digestion ○ Diet and healthy eating KS3 ○ Y7 Cells ○ Y8 Digestion KS4 ○ Y9 Cells ○ Y9 Cell transport ○ Y9 & 11 Cell division and reproduction KS5 ○ Topic 1, 2, 4

		○ Use 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. ○ Evaluate risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences. ○ Interpreting observations and other data (presented in verbal, diagrammatic, graphical, symbolic or numerical form), including identifying patterns and trends, making inferences and drawing conclusions ○ Appreciate the power and limitations of science and consider any			considering healthcare ○ **Loving and compassionate** when we consider how scientific advancements can be used to help others ○ **Care for God's creation** ○ **Life and dignity of the human** ○ **Options for vulnerable** ○ **Physical** ○ **Cultural** ○ **Maths** ○ **PE** ○ **History** ○ **RE** ○ **Biologist** ○ **Biomedical Scientist** ○ **Teacher** ○ **Nurse** ○ **Midwife** ○ **Doctor**	

		ethical issues which may arise. ○ Explain everyday and technological applications of science; evaluate associated personal, social, economic and environmental implications; and make decisions based on the evaluation of evidence and arguments.				
Summer Term 2						