

Biology Curriculum Overview – Year 10

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						
Infection and response	<ul style="list-style-type: none"> ○ Communicable diseases ○ Viral diseases ○ Bacterial diseases ○ Fungal diseases ○ Protist diseases ○ Human defence systems ○ Vaccination ○ Antibiotics and painkillers ○ Discovery and development of drugs ○ Producing monoclonal antibodies (Triple) ○ Uses of monoclonal antibodies (Triple) ○ Detection and identification of plant diseases (Triple) ○ Plant defence responses (Triple) 	<ul style="list-style-type: none"> ○ Understand how scientific methods and theories develop over time. ○ Evaluate the global use of vaccination in the prevention of disease ○ 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 ○ Understand that the results of testing and trials are published only after scrutiny by peer review ○ Recognise the importance of peer review of results and of 	<ul style="list-style-type: none"> ○ Mid-topic assessment ○ End of topic assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel quiz 	<ul style="list-style-type: none"> ○ United in harmony when we consider the wider uses of antibiotics ○ Grateful for medicine/vaccination and the evolution of the immune system ○ Faith-filled and hopeful when seeing beyond the naked eye and the advancements of medicine ○ 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 	<ul style="list-style-type: none"> KS1/2 <ul style="list-style-type: none"> ○ Healthy human development KS3 <ul style="list-style-type: none"> ○ Y7 Cells KS4 <ul style="list-style-type: none"> ○ Y9 Communicable disease ○ Y11 Non-communicable disease and treatments KS5 <ul style="list-style-type: none"> ○ Topic 4 and 8

		<p>communicating results to a range of audiences</p> <ul style="list-style-type: none"> ○ Appreciate the power and limitations of science and consider any ethical issues which may arise. ○ Evaluate risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences ○ Appreciate the power of monoclonal antibodies and consider any ethical issues ○ Evaluate the advantages and disadvantages of monoclonal antibodies ○ 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 ○ The everyday application of scientific knowledge to detect 			<ul style="list-style-type: none"> ○ Dignity of the human person when considering healthcare ○ Courageous and resilient when we consider how vaccines were developed and new drugs are trialled ○ Loving and compassionate when we think about those who have suffered serious illness ○ Dignity of God's people ○ Community and participation ○ Dignity in work ○ Solidarity ○ Personal ○ Cultural ○ Social ○ Art ○ History ○ Geography ○ PE ○ Maths ○ Doctor ○ Nurse ○ Veterinary science ○ Mid wife ○ Biomedical scientist ○ Research ○ Epidemiologist ○ Biologist 	
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		<p>and identify plant disease</p> <ul style="list-style-type: none"> ○ The understanding of ion deficiencies allows horticulturists to provide optimum conditions for plants. 				
Autumn Term 2						
Bioenergetics	<ul style="list-style-type: none"> ○ Photosynthetic reaction ○ Rate of photosynthesis ○ Uses of glucose from photosynthesis ○ Aerobic and anaerobic respiration ○ Response to exercise ○ Metabolism 	<ul style="list-style-type: none"> ○ Solve simple algebraic equations ○ Recognise and use expressions in decimal form ○ Use ratios, fractions and percentages ○ 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 ○ Understand and use the symbols: =, <>, >, \propto, ~ ○ Explain everyday and technological applications of science; evaluate associated personal, social, economic and 	<ul style="list-style-type: none"> ○ Mid-topic assessment ○ End of topic assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel quiz 	<ul style="list-style-type: none"> ○ United in harmony when we consider the value of plants to life ○ 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 plant based science ○ 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 ○ Care for creation ○ Community and participation 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Plant growth and health ○ Adaptation ○ Function of plant parts ○ Animal life cycles ○ Animal survival <p>KS3</p> <ul style="list-style-type: none"> ○ Y7 Cells ○ Y8 Photosynthesis ○ Y8 Respiration <p>KS4</p> <ul style="list-style-type: none"> ○ Y9 Cells ○ Y10 Cell transport ○ Y11 Digestive system ○ Y11 Circulatory system and NCD

		<p>environmental implications; and make decisions based on the evaluation of evidence and arguments (HT)</p> <ul style="list-style-type: none"> ○ Use data to relate limiting factors to the cost effectiveness of adding heat, light or carbon dioxide to greenhouses. 			<ul style="list-style-type: none"> ○ Dignity of God's people ○ Solidarity ○ Personal ○ Social ○ Physical ○ Moral ○ Cultural ○ Art ○ Geography ○ PE ○ Food Tech ○ Maths ○ Botanist ○ Ecologist ○ Environmental scientist ○ Biologist ○ Research 	<p>KS5</p> <ul style="list-style-type: none"> ○ All topics
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Spring Term 1

<p>Homeostasis and response</p>	<ul style="list-style-type: none"> ○ Homeostasis ○ Structure and function of the human nervous system ○ The brain (Triple) ○ The eye (Triple) ○ Control of body temperature (Triple) 	<ul style="list-style-type: none"> ○ Construct and interpret frequency tables and diagrams, bar charts and histograms ○ Translate information between graphical and numeric form ○ Evaluate risks both in practical science and the wider societal context, including perception of risk in relation to data and consequences (HT only) ○ Evaluate the benefits and risks of procedures carried out on the brain 	<ul style="list-style-type: none"> ○ Mid-topic assessment ○ End of topic assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel quiz 	<ul style="list-style-type: none"> ○ United in harmony when we consider the impact of the NS on life as it is ○ 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 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Animal life cycles ○ Animal survival ○ Healthy human development ○ Senses <p>KS3</p> <ul style="list-style-type: none"> ○ Y7 Cells ○ Y7 Movement <p>KS4</p> <ul style="list-style-type: none"> ○ Y9 Cells ○ 10 Cell transport
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		<p>and nervous system (Triple)</p> <ul style="list-style-type: none"> ○ 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 			<p>when planning and carrying out a practical</p> <ul style="list-style-type: none"> ○ 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 ○ Dignity of God's people ○ Community and participation ○ Care for creation ○ Dignity in work ○ Peace and reconciliation ○ Solidarity ○ Personal ○ Social ○ Moral ○ Cultural ○ Art ○ PE ○ Maths ○ Biologist ○ Biomedical scientist ○ Neurologist 	<ul style="list-style-type: none"> ○ Y11 Digestive system ○ Y11 Circulatory system <p>KS5</p> <ul style="list-style-type: none"> ○ Topic 1, 8
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Spring Term 2						
Homeostasis and response	<ul style="list-style-type: none"> ○ Human endocrine system ○ Control of blood glucose concentration ○ Maintaining water and nitrogen balance in the body (Triple) ○ Hormones in human reproduction ○ Contraception ○ The use of hormones to treat infertility (HT only) ○ Negative feedback (HT only) ○ Control and coordination in plants (Triple) ○ Use of plant hormones (Triple/HT only) 	<ul style="list-style-type: none"> ○ 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 ○ Appreciate the power and limitations of science and consider any ethical issues which may arise. ○ Evaluate information around the relationship between obesity and diabetes, and make recommendations taking into account social and ethical issues. ○ Students should be able to describe how kidney dialysis works 	<ul style="list-style-type: none"> ○ Mid-topic assessment ○ End of topic assessment 	<ul style="list-style-type: none"> ○ Worksheets ○ Flipped learning activities ○ Past exam questions ○ Research ○ Practical write-ups ○ SAM learning ○ Satchel quiz 	<ul style="list-style-type: none"> ○ United in harmony when we consider the impact of the endocrine system on life as it is ○ 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 	<p>KS1/2</p> <ul style="list-style-type: none"> ○ Animal life cycles ○ Animal survival ○ Healthy human development <p>KS3</p> <ul style="list-style-type: none"> ○ Y7 Cells ○ Y7 Human reproduction <p>KS4</p> <ul style="list-style-type: none"> ○ Y9 Cells ○ Y9 Communicable disease ○ Y10 Photosynthesis ○ 10 Cell transport <p>KS5</p> <ul style="list-style-type: none"> ○ Topic 1, 2, 7, 8

- Evaluate the advantages and disadvantages of treating organ failure by mechanical device or transplant
- Show why issues around contraception cannot be answered by science alone
- 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
- Understand how scientific methods and theories develop over time
- Developments of microscopy techniques have enabled IVF treatments to develop
- Understand social and ethical issues associated with IVF treatments
- Evaluate from the perspective of patients and doctors the methods of treating infertility

- **Dignity of the human person** when considering healthcare
- **Loving and compassionate** when we consider how scientific advancements can be used to help others
- **Dignity of God's people**
- **Community and participation**
- **Care for creation**
- **Dignity in work**
- **Peace and reconciliation**
- **Solidarity**
- **Personal**
- **Social**
- **Moral**
- **Cultural**
- **Art**
- **PE**
- **Maths**
- **Biologist**
- **Biomedical scientist**
- **Neurologist**
- **Ophthalmologist**
- **Doctor**
- **Nurse**
- **Occupational therapist**
- **Physiotherapist**
- **Research**
- **Endocrinologist**

		<ul style="list-style-type: none"> ○ 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 ○ Interpret and explain simple diagrams of negative feedback control ○ Understand how the everyday use of hormones as weed killers has an effect on biodiversity. 			<ul style="list-style-type: none"> ○ Obstetrician/ gynaecologist 	
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Summer Term

The curriculum for the summer term is determined by the progress and achievements of each group individually. For example, a group that is achieving as expected may proceed to Year 11 GCSE Biology topics, however, a group that is underperforming will require revision and intervention. In this manner our science curriculum is adapted to suit the unique needs of each group. The outcomes of this decision might be:

- Continuation of the GCSE Biology course (Year 11 topics)
- Revision of Year 9 and/or 10 content
- Exam technique review
- Math skills