Topic 7 Animal Coordination, Control and Homeostasis

Opportunities for Breadth and Challenge: Discussion of how Hormones affect certain types of Diseases and Disorders.			
Links to Sequencing for Learning: This unit links to previous work on Health and Disease This unit prepares pupils for work GCSE's			
Section	What we are learning (Key knowledge)	Key words	Assessment
1	Hormones • What are hormones? • Where are hormones produced? • What are the names of some target organs?	Hormones, Gland, Target organs, Adrenaline, Insulin, Growth Hormone, Oestrogen, Progesterone,	Prior knowledge
2	**Higher and Triple Biology Hormonal Control and metabolic rate** • **What is a negative feedback mechanism?** • **How does thyroxine affect metabolic rate?** • **How does adrenalin prepare the body for 'fight of flight'?**	Glycogen, Negative feedback, Fight or Flight response, Thyroxine	Labelled diagram
3	The Menstrual Cycle • What is the menstrual cycle? • What are the roles of oestrogen and progesterone in the menstrual cycle? • How can hormones and barrier methods be used as contraception?	Puberty, Menstrual cycle, Menopause, Menstruation, Period, Ovulation, Contraception	Exam style questions
4	**Higher and Triple Biology Hormones and the Menstrual Cycle** • **How do hormones control the menstrual cycle?** • **How do hormones in contraceptive pills interact with hormones in the body to prevent pregnancy?** • **How can hormones increase the chance of pregnancy?**	FSH, Follicles, LH, Assisted reproductive technology, Invitro Fertilisation, Clomifene Therapy	Table of types of contraception
5	Control of Blood Glucose levels • What is homeostasis? • How is bloody glucose concentration regulated? • How can type 1 diabetes be controlled?	Insulin, Diabetes, Glucagon,	Exam question
6	Type 2 Diabetes • How is type 2 diabetes caused? • How can type 2 diabetes be controlled? • How are body mass and type 2 diabetes correlated?	Diabetes, Insulin, BMI, Correlated	MUM- Causes and differences between type one and type two diabetes.

7	**Triple Science Thermoregulation** • **Why is it important to control core body temperature?** • **How are the skin, muscles and the hypothalamus involved in core body temperature?** • **How do blood vessels help in controlling body temperature?**	Body temperature, hypothermia, hyperthermia, hypothalamus, vasoconstriction, vasodilation.	Labelled diagram and questions
8 and 9	**Triple Science Osmoregulation and The Kidney's** • **Why is osmoregulation important?** • **What is the structure of the urinary system?** • **How can kidney failure be treated?** • **What are the parts of a nephron?** • **How does filtration and reabsorption take place in a nephron?** • **How does ADH affect nephrons?**	Nephron, Urea, Dialysis, Glomerulus, Bowmans capsule, Filtration, Active transport, Selective reabsorption, Collecting Duct, Loop of Henle	Exam questions and labelled diagrams
7 or **10**	Revision		Class assessment sheet
8 or **11**	End of Unit Test		EUT
9 or **12**	Test Feedback		Test feedback sheet

Exchange and Transport in Animals

Opportunities for Breadth and Challenge: Heart dissection and diseases affecting the Heart			
Links to Sequencing for Learning: This unit links to previous work on Body systems in Year 7, Respiration in Year 8 This unit prepares pupils for work for GCSE Examinations			
Section	What we are learning (Key knowledge)	Key words	Assessment
1	Efficient transport and exchange • What substances need to be transported into and out of the body? • Why is the surface areas: volume ratio important for exchange of substances? • How are lungs adapted for gas exchange?	Diffusion, Active transport. Surface area, Volume, Gas Exchange.	Prior knowledge
2	**Triple Biology Factors affecting diffusion.** • **How do surface area and concentration affect the rate of diffusion?** • **What is the relationship between the rate of diffusion and diffusion distance?** • **What is Fick's law?** The Circulatory system • What are the components of the circulatory system? • How are the blood vessels adapted to their functions? • How is blood adapted to its function?	Concentration, Concentration Gradient, Diffusion, Plasma, Platelets, Red blood cells, White Blood cells, Viens, Arteries, Capillaries.	Retrieval Qs of keywords
3	**Triple Biology The circulatory system as above** The Heart • What is the structure of the heart like? • How does the heart pump blood? • How do you calculate cardiac output?	Pulmonary artery, Pulmonary vein, Vena Cava, Aorta, Chambers, Cardiac output.	Homework- Exam style Questions
4	**Triple Biology The Heart as above** Cellular respiration • Why do organisms need to respire? • Why is respiration an exothermic process?	Aerobic, Anaerobic, Respiration, Lactic acid, Energy, Mitochondria	Comparison question on aerobic and anaerobic

	• What are the differences between aerobic and anaerobic respiration?		
5	**Triple Biology Cellular Respiration as above** Core Practical Respiration rates *Investigate the rate of respiration in living organisms*.	Respirometer, Respiration.	MUM – Respiration rates
6	**Triple Biology – Core Practical -Respiration rates – as above**		As above
6 & **7**	Revision		Class assessment sheet
7 & **8**	End of Unit Test		EUT
9 & **10**	Test Feedback		Test feedback sheet

Ecosystems and Material Cycles

Opportunities for Breadth and Challenge: Links to climate and climate change. Discussions on preserving the environment.			
Links to Sequencing for Learning: This unit links to previous work on Ecosystems and adaptations in Year 8. This unit prepares pupils for work for GCSE Examinations			
Section	What we are learning (Key knowledge)	Key words	Assessment
1	Ecosystems • What is a community of organisms? • How are ecosystems structured? • Why is interdependence in communities important?	Resources, Ecosystem, Community, Interdependent, Habitat, Quadrat, Samples, Abundance, Food web	Prior knowledge
2	**Triple Energy Transfer** • **How is energy transferred from each trophic level, including in ways that are not useful to organisms?** • **How does energy transfer limit the length of a food chain?** • **How do you calculate the efficiency of energy transfer between trophic levels?** Abiotic Factors and Community • What are abiotic factors? • How do natural abiotic factors affect communities? • How can pollution affect communities?	Biomass, Sankey diagram, Pyramid of Biomass, Trophic level, Abiotic, Biotic, Belt transect, adaptations, drought, Pollutants.	Retrieval Qs of keywords
3	**Triple Biology Abiotic Factors and the community as above.** Core practical Quadrats and Transects *Investigate the relationship between organisms and their environment using field-work techniques, including quadrats and belt transects*.	Quadrats, Belt transects, abundance, distribution.	Homework- Exam style Questions
4	**Triple Biology Core Practical Quadrats and Transects as above** Biotic factors and communities • What are biotic factors? • How can competition affect communities? • How can predation affect communities?	Communities, Biotic, competition, Predation, Predator-Prey cycle.	MUM- A method for used quadrats and transects
5	**Triple Biology Biotic factors and communities as above.** Assessing Pollution • What are indicator species? • How can indicator species be used as evidence of pollution? • How useful are indicator species as evidence of pollution?	Lichens, Indicator, Species, Pollution, Eutrophication, Sewage	Indicator species table
6	**Triple Biology Assessing pollution as above** Parasitism and Mutualism	Parasite, mutualist, host,	Exam style questions

	• How are some organisms dependent on other species? • How does parasitism affect the survival of some organisms? • How does mutualism help the survival of some organisms?		
7	**Triple Biology Parasitism and Mutualism** Biodiversity and Humans • How does fish farming affect ecosystems? • How does the introduction of new species affect biodiversity? • How does eutrophication affect ecosystems?	Over fishing, fish farms, indigenous, native, non-indigenous,	Ordering the process of eutrophication
8	**Triple Biology Biodiversity and Humans as above** Preserving Biodiversity • How can animal species be conserved? • How can animal conservation protect biodiversity? • How can reforestation affect biodiversity?	Conservation, reforestation, captivity, endangered	Conservation poster
9	**Triple Biology Preserving Biodiversity as above** The Water Cycle • Which materials cycle through ecosystems? • How does water cycle through ecosystem? • How is potable drinking water produced?	Water cycle, potable, desalination, Distillation, evaporated, condensed	Exam question on methods of making potable water
10	**Triple Biology Food security** • **What is food security?** • **Which factors affect food security?** • **How is food security affected by different factors?** The Carbon Cycle • What is a decomposer? • How is carbon cycled through an ecosystem? • What is the role of decomposers in the carbon cycle?	**Food security, agriculture inputs, yield, sustainability, biofuel.** Decomposers, faeces, biomass, fossil fuels, decay.	Carbon Cyle exam question
11	**Triple Biology The Water Cycle as above** The Nitrogen cycle • Why do plants need nitrates? • How do farmers increase the amount of nitrates in the soil? • What is the role of bacteria in the nitrogen cycle?	Nitrates, nitrogen fixing bacteria, crop rotation, manure,	Labelled diagram
12	**Triple Biology The carbon cycle as above**		As above
13	**Triple Biology The Nitrogen cycle as above**		As above
14	**Triple Biology Rates of decomposition** • **How can the rate of decomposition of food be reduced?** • **How can the rate of decomposition in composting be increased?** • **How can the rate of decay be calculated?**	Decomposers, preservation, compost, soil fertility	Question on making compost
12 &15	Revision		Revision sheet

13 &16	End of Unit Test		EUT
14&17	Test Feedback		Test feedback sheet