SUBJECT CURRICULUM OUTLINE

Year 10

Term	Topic/Unit of work	Knowledge	Skills	Assessment
Summer Term 2:	Cloning.	Cloning.	Understand the process of cloning in plants and animals.	Fortnightly STAMP assessments.
Autumn Term 1	Infection and response	Antibiotic resistance, Painkillers and antibiotics, discovery and development Plant diseases	- Knowledge and understanding of microorganisms and how antibiotic resistance occurs. - Structural differences in bacteria and virus' specific to understanding why antibiotics are only effective at treating bacterial infections. - Origin of medicines used to treat disease (i.e.Willow foxglove and fungi) and differences in their affect i.e. how painkillers work to reduce neurotransmitter production and lessen pain etc - Costs and processes involved in the discovery and development of new drugs i.e. Clinical trials etc To be able to describe the production and usage of monoclonal antibodies.	Fortnightly STAMPS assessments.
	Cells	Animal and plant cells Specialised cells Prokaryotes and Eukaryotes Microscopy Stem Cells Chromosomes Mitosis	Science skills - defining variables in practical applications Maths for science - units, graphing skill and applying and rearranging simple equations Practical microscope skills -onion cells	

		Diffusion Osmosis Active transport Cloning	-red blood or cheek cells Safe use of biohazards Diffusion demos: spray, potassium permanganate Osmosis- Potatoes or other root vegetables Clone: plants	
Autumn Term 2	Organisation	Principles of organisation. Animal tissues, organs and organ systems. Plant tissues, organs and systems.	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. Observation and drawing of a transverse section of leaf. Measure the rate of transpiration by the uptake of water. Investigate the distribution of stomata and guard cells. Process data from investigations involving stomata and transpiration rates to find arithmetic means, understand the principles of sampling and calculate surface areas and volumes	Fortnightly STAMPS to assess progress.
Spring Term 1	Bioenergetics	Photosynthesis Uses of glucose Rate of photosynthesis Limiting factors	Science practical skills- photosynthesis and exercise activities to compare different types of respiration	Fortnightly STAMPS assessments

		Aerobic respiration Anaerobic respiration Responses to exercise Metabolism	Maths for Science - balancing equations	
Spring Term 2	Homeostasis	Homeostasis and response. Nervous system Endocrine system Controlling blood glucose Reproductive hormones Contraception Hormones and fertility Negative feedback	Evaluate information around the relationship between obesity and diabetes, and make recommendations taking into account social and ethical issues. non-hormonal methods of contraception. Fertility can be controlled by a variety of hormonal and nonhormonal methods of contraception. These include: • oral contraceptives that contain hormones to inhibit FSH production so that no eggs mature • injection, implant or skin patch of slow release progesterone to inhibit the maturation and release of eggs for a number of months or years • barrier methods such as condoms and diaphragms which prevent the sperm reaching an egg • intrauterine devices which prevent the implantation of an embryo or release a hormone • spermicidal agents which kill or disable sperm • abstaining from intercourse when an egg may be in the oviduct • surgical methods of male and female sterilisation.	

			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. 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. Interpret and explain simple diagrams of negative feedback control.	
Summer Term 1	Revision Assessment week Homeostasis continued	Recap paper 1 content Cell Biology Organisation Infection and response Bioenergetics	Revision advice and tips Exam techniques	Fortnightly STAMPS assessments

Summer Term 2	Revision Continued. Finish homeostasis (Triple content):	Triple content - brain, eye, osmoregulation, thermoregulation, plant hormones	Continue to revise previously taught content. Work on practicing exam questions and techniques. After revision ends, complete the triple content for homeostasis.	Mock exams STAMP assessments fortnightly.

Year 11

Term	Topic/Unit of work	Knowledge	Skills	Assessment
Autumn Term 1	Ecology	ECOLOGY: Adaptations, interdependence and competition. Organisation of an ecosystem. Biodiversity and the effect of human interactions on ecosystems. Decomposition and Impact of environmental change.	ECOLOGY: Extract and interpret information from charts and tables, record observations of organisms, explain how waste, deforestation and global warming have an impact on biodiversity. Interpret and explain the carbon and water cycle. Understand the conflict between the need for cheap available compost to increase food production and the need to conserve peat bogs and peatlands as habitats for biodiversity and to reduce carbon dioxide emissions. Evaluate given information about methods that can be used to tackle problems caused by human impacts on the environment. Use scientific theories to make a hypothesis about the effect of temperature on rate of decay.	STAMPs every three weeks

			Carry out experiments with due regard for the correct manipulation of apparatus, the accuracy of measurements and health and safety considerations. Make and record observations and measurements. Evaluate methods and identify possible improvements. Calculate rate changes in the decay of biological material. Translate information between numerical and graphical form. Plot and draw appropriate graphs selecting appropriate scales for the axes.	
Autumn Term 2		Trophic levels in an ecosystem and Food production	Calculate the efficiency of biomass transfer between trophic levels. Interpret population and food production statistics to evaluate food security. Understand that some people have ethical objections to some modern intensive farming methods. Evaluate the advantages and disadvantages of modern farming techniques Understand how application of different fishing techniques promotes recovery of fish stocks.	STAMPs every three weeks MOCK EXAM Paper 1
Spring Term 1	Inheritance and variation,	INHERITANCE and VARIATION: Reproduction Sexual and asexual reproduction meiosis. Advantages and	INHERITANCE and VARIATION: Modelling behaviour of	STAMPs every three weeks

		disadvantages of sexual and asexual reproduction Genetic Disorders.	chromosomes during meiosis. Knowledge and understanding: Chromosomes, reproduction in animals, specialised cells, cell cycle, communicable disease and risk factors. scientific vocabulary, terminology and definitions,	
Spring Term 2		DNA structure Genetic engineering, variation, selective breeding, cloning evolution and extinction	Consider ethical issues associated with embryonic screening and gene therapy. Explain the evidence for evolution. Explain the benefits and risks of selective breeding. Interpret information about genetic engineering techniques and to make informed judgements about issues concerning cloning and genetic engineering, including GM crops. Historical developments of our understanding of the causes and prevention of malaria. Explain the potential benefits and risks of cloning in agriculture and in medicine and that some people have ethical objections. There are links with this content to Advantages and disadvantages of sexual and asexual reproduction and Selective breeding.	Mock Exams Paper 2

		Theory of evolution Speciation The understanding of genetics	Students should appreciate that the theory of evolution by natural selection developed over time and from information gathered by many scientists. The theory of speciation has developed over time. Our current understanding of genetics has developed over time.	
Summer Term 1	Revision	Detailed knowledge of the 10 required practicals. The scientific concepts and processes they are based on. (see AQA specification for skills development)	- Data analysis / interpretation and explanations. - Exam technique - Key language/ vocabulary. Numeracy skills	
Summer Term 2	Revision	Detailed knowledge of the 10 required practicals. The scientific concepts and processes they are based on. (see AQA specification for skills development)	- Data analysis / interpretation and explanations. - Exam technique - Key language/ vocabulary. Numeracy skills	