

Yr10 Sep (KS4)	Topic Area	Key knowledge/skills (what <u>has</u> to be learnt)	Examples of key compulsory practicals for students	Knowledge/Skills revisited and to be revisited	What does good look like?	Resources/support at home
1 Cells and organisation (continued)	B4 Organising animals and plants	<p>The structure and function of the human circulatory system. The role and components of blood. The structure and function of the different blood vessels and the heart. The way of solving problems with heart and blood supply to the heart.</p> <p>The structure and function of the human gas exchange system. The adaptations of the alveoli of the lungs for effective gas exchange. The mechanisms of breathing. The importance of ventilating the lungs to maintain steep concentration gradients.</p> <p>The tissues and organs in plants. The role of the leaf stomata in gas exchange in a plant. How evaporation and transpiration are controlled in plants.</p>		KS3 Revisited content: 8.3 Breathing and gas exchange. 9.4 Leaves	Please see the published checklists on the website. For students to be assessed to have 'mastered' the curriculum they should be competent in the Aiming for 6 criteria. Students who have progressed beyond mastery are competent in many aspects of the Aiming for 8 criteria.	Kerboodle Google classroom BBC Bitesize My GCSE Science
2 Disease and bioenergetics	B5 Communicable disease	<p>The role of bacteria, viruses, protists and bacteria in diseases.</p> <p>How bacteria multiply by cell division. How to grow an uncontaminated culture of</p>	Required practical: Investigating the effect of antiseptics and antibiotics.			Kerboodle Google classroom BBC Bitesize My GCSE Science

		<p>bacteria in the lab.</p> <p>How to calculate the number of bacteria in a population.</p> <p>How to calculate the effect of antibacterial chemicals by measuring the areas of zones of inhibition.</p> <p>How the human defense responses work. How your white blood cells protect you from disease.</p> <p>How mineral deficiencies can cause diseases in plants. How plant diseases can be detected How plants defend themselves against pathogens and herbivores.</p>				
	B6 Preventing and treating disease	<p>How the immune system works and how vaccination protects people against disease. How antibiotics and painkillers work.</p> <p>How some drugs were discovered and how scientists look for new drugs. The stages involved in testing and trialling new drugs.</p> <p>How monoclonal antibodies are produced and used.</p>				<p>Kerboodle</p> <p>Google classroom</p> <p>BBC Bitesize</p> <p>My GCSE Science</p>
	B7 Non-communicable	<p>What is meant by a non-communicable disease. How</p>				<p>Kerboodle</p> <p>Google classroom</p>

	diseases	cancer spreads. The difference between malignant and benign tumours. Smoking and the risk of disease. The effect of diet and exercise on the risk of developing different diseases. How alcohol affects the body.				BBC Bitesize My GCSE Science
	B8 Photosynthesis	The process of photosynthesis in plants and the factors that limit the rate. How plants use the glucose they make.	Practical: Light intensity and rate of photosynthesis Practical: testing for starch	KS3 Revisited content: 9.4 Photosynthesis, leaves, investigating photosynthesis		Kerboodle Google classroom BBC Bitesize My GCSE Science
	B9 Respiration	The importance of aerobic and anaerobic respiration. How the body responds to exercise. The metabolic reactions that take place in the body and the role of the liver.		9.1 Aerobic respiration, anaerobic respiration, biotechnology		Kerboodle Google classroom BBC Bitesize My GCSE Science
3 Biological responses	B10 The human nervous system	The principles of homeostasis and why it is important for internal body conditions to be controlled. The differences between sensory and motor neurones and their role in coordination and control. What the main areas of the brain do and how scientists find out about the structure and function of the brain. How the tissues in the human eye are related to	Required practical: measuring reaction times.			Kerboodle Google classroom BBC Bitesize My GCSE Science

		their function.				
	B11 Hormonal coordination	<p>The principle of hormonal control. The role of the pancreas in monitoring and controlling blood glucose concentration. How diabetes is treated.</p> <p>How reproduction is controlled by hormones and how hormones can be used in the artificial control of fertility.</p> <p>How plants respond to light and gravity to ensure they capture as much light as possible.</p>	Required practical: The effect of light and gravity on the growth of newly germinated seedlings.	KS3 Revisited content: 10.1 Adolescence, reproductive systems, fertilisation and implantation, the menstrual cycle		Kerboodle Google classroom BBC Bitesize My GCSE Science
Yr11 (KS4)	Topic Area	Key knowledge/skills (what <u>has</u> to be learnt)	Examples of key compulsory practicals for students	Knowledge/Skills revisited and to be revisited	What does good look like?	Resources/support at home
3 Biological responses	B12 Homeostasis in action	How the body monitors its temperature. How the body removes waste products. The role of the kidney and how water balance is controlled. How dialysis works and what is involved in a kidney transplant.			Please see the published checklists on the website. For students to be assessed to have 'mastered' the curriculum they should be competent in the Aiming for 6 criteria. Students who have progressed beyond mastery are	Kerboodle Google classroom BBC Bitesize My GCSE Science

					competent in many aspects of the Aiming for 8 criteria.	
4 Genetics and evolution	B13 Reproduction	<p>How the DNA of an organism can be analysed. Know about the variants of genes known as alleles.</p> <p>How meiosis in cell division forms gametes.</p> <p>The difference between sexual and asexual reproduction.</p> <p>The structure of DNA and how protein synthesis is controlled.</p> <p>How information is passed from one generation to another. How to use genetic diagrams, direct proportion, simple ratios and probability to predict outcomes of a genetic cross. What happens in gene mutations.</p>		KS3 Revisited content:: Inheritance, DNA, genetics		Kerboodle Google classroom BBC Bitesize My GCSE Science
	B14 Variation and evolution	<p>The importance of selective breeding in the development of plants and animals and the increasing use of genetic engineering to introduce desirable characteristics.</p> <p>How clones are created. How adult cell cloning is carried out.</p>		KS3 Revisited content: year 7 10.1 variation		Kerboodle Google classroom BBC Bitesize My GCSE Science
	B15 Genetics and evolution	The history of genetics and the work of Gregor Mendel.		KS3 Revisited content: year 8 10.3 evolution, natural selection,		Kerboodle Google classroom BBC Bitesize

		<p>How Charles Darwin built up the evidence for his theory of evolution by natural selection and some of the barriers to the acceptance of his ideas, as well as some of the modern evidence we have for evolution.</p> <p>How fossils are formed and how they can reveal how organisms have changed over time.</p> <p>How the DNA based systems for classifying organisms work.</p>		Charles Darwin		My GCSE Science
5 Ecology (current year 11 already completed)	B16 Adaptations, interdependence and competition	<p>How to investigate and measure the distribution and abundance of species in a system. Know about the competition between organisms for resources and about the adaptations of organisms that result from natural selection and enable them to compete successfully in specific environments.</p>	Practical: Investigate the population size of a common species in a habitat.	KS3 Revisited content: year 7 9.1 interdependence, food webs and food chains, ecosystems and competition		Kerboodle Google classroom BBC Bitesize My GCSE Science
	B17 Organising an ecosystem	<p>The importance of material cycles in nature that return chemicals from the bodies of organisms to the soil, water and air.</p> <p>The importance of decomposition and the factors that affect the rate of decay and of compost formation.</p>	Practical: Investigating the effect of temperature on the rate of decay of fresh milk by measuring pH change.			Kerboodle Google classroom BBC Bitesize My GCSE Science

	B18 Biodiversity and ecosystems	<p>The reasons for the growth in the human population and its impact in terms of pollution of the land, water and air.</p> <p>How to construct accurate pyramids of biomass using data. The meaning of food security and the measures that can be taken to make food production both more efficient and sustainable.</p>				Kerboodle Google classroom BBC Bitesize My GCSE Science