SUBJECT			
Year 7			
TERM 1 content and skills	**TERM 2 content and skills**	**TERM 3 content and skills**	**EXTENDED CURRICULUM (trips/visits/after school activities)**
Assessment:	**Assessment:**	**Assessment:**	
Year 8			
Assessment:	**Assessment:**	**Assessment:**	
Year 9			
Assessment:	**Assessment:**	**Assessment:**	
Year 10			
Italics indicate the additional content that is included in separate science	*Italics indicate the additional content that is included in separate science*	*Italics indicate the additional content that is included in separate science*	

<u>Topic 1: Cell Biology</u> - The structure of animal cells, plant cells and prokaryotic cells. - The subcellular structures within eukaryotic and prokaryotic cells. - How microscopy techniques have changed over time and carry out calculations involving magnification, real size and image size. **Required Practical:** Using a microscope to observe, draw and label cells. - Specialised cells. - Mitosis and the cell cycle. - Stem cells, how we can use them and the ethics of this. - Transport in cells: diffusion, osmosis and active transport. **Required Practical: I**nvestigating the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue. **<u>Topic 2: Organisation</u>** (taught across this term and next term) - The human digestive system and the enzymes involved in digesting proteins, fats and carbohydrates. - How enzymes work by the 'lock and key' model. **Required Practical**: use qualitative reagents to test for a range of carbohydrates, lipids and proteins. **Required Practical**: investigate the effect of pH on the rate of reaction of amylase enzyme. - The structure of the heart and blood vessels.	**<u>Topic 2: Organisation</u>** (continuing from last term) - The constituents of blood. - Coronary heart disease: what it is and how we treat it - Relationship between health and disease and the interactions between different types of disease - The effect of lifestyle factors including diet, alcohol and smoking on the incidence of non-communicable diseases - Different types of cancer - The structures of plant tissues and organs and how they are related to their functions **<u>Topic 3: Infection and Response</u>** (taught across this term and next term) - How diseases caused by viruses, bacteria, protists and fungi are spread in animals and plants (and how we try to prevent these diseases from spreading) - Human defences against pathogens (including non-specific defences and the immune system) - Vaccinations and antibiotics to protect us from pathogens - Discovery and development of drugs *- Monoclonal antibodies* *- Plant diseases and plant defence responses*	(Combined scientists will finish topic 3 in this term) **<u>Topic 4: Bioenergetics</u>** - Photosynthesis and the conditions which affect the rate of photosynthesis. **Required Practical**: investigate the effect of light intensity on the rate of photosynthesis using an aquatic organism such as pondweed - Aerobic and anaerobic respiration - How the body responds to exercise - Metabolism Separate Science students will start topic 7 in this term – see Year 11 for details.	
Assessment: **Low stakes Microsoft Forms quizzes throughout all topics.** **End of term written test**	**Assessment:** **Low stakes Microsoft Forms quizzes throughout all topics.** **End of term written test**	**Assessment:** **Low stakes Microsoft Forms quizzes throughout all topics.** **End of year written test**	
Year 11			

<u>Topic 5: Homeostasis and response</u> - Homeostasis - Structure and function of the human nervous system **Required Practical**: plan and carry out an investigation into the effect of a factor on human reaction time *- The brain* *- The eye* *- Control of body temperature* - Human endocrine system (glands and hormones) - Control of blood glucose concentration - Two types of diabetes and how they are treated *- Maintaining water and nitrogen balance in the body* - Hormones in reproduction and the menstrual cycle - Contraception *- Infertility and how we treat it* *- Plant hormones and how we can manipulate them*	**<u>Topic 6: Inheritance, variation and evolution</u>** - Sexual and asexual reproduction *- Advantages and disadvantages of sexual and asexual reproduction* - Meiosis - DNA and the genome *- Structure of DNA and how proteins are synthesised* - Genetic inheritance and inherited disorders - Sex determination - Variation: how a combination of genetics and environmental factors shape our characteristics - Evolution by natural selection - Selective breeding of plants and domesticated animals - Genetic engineering: science and ethics *- Cloning of plants and animals* *- The different scientists that contributed towards our understand of the theory of evolution* *- Speciation* - Fossils and evidence for evolution - How organisms become extinct - Classification of living organisms	**<u>Topic 7: Ecology</u>** - Ecosystems and how the community of living organisms (biotic) interacts with the non-living (abiotic) parts of their environment. - Organisms have adaptations which may be structural, behavioural or functional. - Feeding relationships within a community can be represented by food chains **Required Practical**: use sampling techniques to measure the population size of a common species in a habitat. - Explain how the carbon and water cycles are important to living organisms *- Decomposition and the factors that affects its rate.* ***Required practical**: investigate the effect of temperature on the rate of decay of fresh milk by measuring pH change.* *- the impact of environmental changes on the distribution of species in an ecosystem* - biodiversity and the stability of ecosystems - the impact that human have had on ecosystems: waste management, land use, deforestation and global warming. - The importance of maintaining biodiversity *- Trophic levels and pyramids of biomass* *- Food production: Food security, farming techniques, sustainable fishing and biotechnology to meet the demands of the growing human population*	
Assessment: Whole past paper based on Paper 1 (year 10 content).	**Assessment: Mock exam based on Year 11 content so far.**	**Assessment: Past papers based on whole course.**	