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| **Biology Trilogy** | | | |
| **Year 10**  **Note all KS3 links refer to the year 9 course which was previously studied by these students.** | | | |
| **Term 1 content and skills** | **Term 2 Content and skills** | **Term 3 Content and Skills** | **Extended Curriculum (trips/visits/afterschool activities)** |
| **Module 1: Cell Biology (Links to KS3 T21)**   * 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**: Investigating the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue.  **Module 2: Organisation (links to KS3 T11 and T17 and Chemistry GCSE module 7)**   * 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. * The constituents of blood. | **Module 2: Organisation (links to KS3 T11 and T17 and PSHE)**  (Continued from last term)   * 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   **Module 3: Infection and Response** **(links to PSHE)** (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 | **Module 4: Bioenergetics (links to KS3 T17, T24 and GCSE Chem Module 9)**   * 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 | * Medtech challenge – links to engineering, design + tech, business skills. Provide industry mentor. * Stem Club * Launchpad- working with Form the Futures and local industry * Engineering Club * STEM leaders |
| **Assessment**: Low stakes Microsoft Forms quizzes throughout all topics. Open book end of topic tests and End of term closed book written test | **Assessment:** Low stakes Microsoft Forms quizzes throughout all topics. Open book end of topic tests and End of term closed book written test | **Assessment:** Low stakes Microsoft Forms quizzes throughout all topics. Open book end of topic tests and End of term paper 1 exam |  |

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| **Biology Separate Science** | | | |
| **Year 11** | | | |
| All students are taught in mixed ability teaching groups recording their work on their iPads using their lab books for note taking in practical work. | | | |
| **Term 1 content and skills** | **Term 2 Content and skills** | **Term 3 Content and Skills** | **Extended Curriculum (trips/visits/afterschool activities)** |
| **Module 5:** Homeostasis and response **(links to PSHE)**   * 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   * Human endocrine system (glands and hormones) * Control of blood glucose concentration * Two types of diabetes and how they are treated * Hormones in reproduction and the menstrual cycle * Contraception | **Module 6:** Inheritance, variation and evolution **(links to KS3 T5 and T20)**   * Sexual and asexual reproduction * Meiosis * DNA and the genome * Genetic inheritance and inherited disorders * Sex determination * -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 * Fossils and evidence for evolution How organisms become extinct * Classification of living organisms | **Module 7: Ecology (links to KS3 T8 and GCSE Chem Module 9)**   * 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 * 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   Consolidation work and revision for exams | STEM Club  Engineering Club |
| **Assessment:** Low stakes Microsoft Forms quizzes throughout all topics. Open book end of topic tests and Interim exam on paper 1 content | **Assessment:** Low stakes Microsoft Forms quizzes throughout all topics. Open book end of topic tests and Mock exam on Paper 2 content | **Assessment:** Low stakes Microsoft Forms quizzes throughout all topics. Open book end of topic tests and  GCSE exams |  |