AVANTI GRANGE
SECONDARY SCHOOL

Science Curriculum Map: KS3

Year 7 - Building the foundations for scientific investigation.					
Autumn Half Term 1	**Autumn Half Term 2**	**Spring Half Term 1**	**Spring Half Term 2**	**Summer Half Term 1**	**Summer Half Term 2**
The Scientific Method: Working safely, research skills, planning and doing experiments. **Chemistry Matter**: Particle model, changes in state, diffusion and conservation of mass, atoms.	**Biology: Cells, tissues and organs**: Using microscopes, animal and plant cell structures and adaptations. Specialised cells, unicellular versus multicellular organisms, hierarchical organisation, and organ transplants.	**Physics Forces**: Forces in newtons, and force diagrams, changes in motion. Representing journeys on distance-time graphs. Elasticity, force-extension and Hooke's Law. Contact and non-contact forces.	**Chemistry Chemical and physical change**: Physical changes and chemical reactions, the Earth's composition, the structure of the Earth, the rock cycle, physical, biological and chemical weathering, and word equations.	**Biology Reproduction**: Asexual and sexual reproduction in plants, reproduction in animals, internal and external fertilisation, puberty and adolescence in humans, human reproductive systems, pregnancy and birth.	**Chemistry Acids and bases**: Acids, bases and neutralisation, indicators, the pH scale, reactions of acids and bases. **Physics Space:** Gravity, our solar system and galaxy, satellites, the seasons and day length, and the speed of light.
Year 8 - Changes within systems.					
Autumn Half Term 1	**Autumn Half Term 2**	**Spring Half Term 1**	**Spring Half Term 2**	**Summer Half Term 1**	**Summer Half Term 2**
Biology Food and nutrition: A healthy diet, imbalances in the diet, the digestive system. **Physics Electrical circuits:** Charge, current, potential difference, circuits in series and parallel, resistance.	**Chemistry Elements and compounds**: Atomic structure, elements and compounds. Chemical symbol and word equations. Pure and impure substances and simple separation techniques. Mendeleev's periodic table. Metals and non-metals.	**Biology Circulation and breathing:** Breathing, adaptations of the lungs, gas exchange, leaf stomata in plants, the impact of exercise, asthma and smoking, aerobic respiration versus anaerobic respiration.	**Physics Energy**: Energy stores, work done, heat, conduction, convection and radiation and insulators. Energy costs. Energy changes within systems. **Chemistry Energy transfers during reactions:** Endothermic and exothermic reactions, measuring temperature changes, using catalysts.	**Biology Disease:** Communicable and non-communicable diseases. Viruses, bacteria and fungi. Antibiotics and antibiotic resistance. **Physics Light and sound:** Wave properties, transverse and longitudinal waves. Reflection, absorption, and transmission. Wave speed and the auditory frequency range.	**Biology Feeding relationships and ecosystems**: Organism interdependence, food webs, pollinators, energy transfer within a food web, photosynthesis, how organisms are affected by their environment, bioaccumulation.

Year 9 - A more detailed look at the extent of change.					
Autumn Half Term 1	**Autumn Half Term 2**	**Spring Half Term 1**	**Spring Half Term 2**	**Summer Half Term 1**	**Summer Half Term 2**
Physics Measuring: Pressure in solids and fluids, hydraulic systems, floating and sinking, accuracy, precision, repeatability and sampling techniques. Observing patterns, using observations and representing data. Understanding systematic and random sources of error.	**Biology Genetics and variation;** Inheritance, chromosomes, DNA and genes, the structure of DNA, continuous versus discontinuous variation, natural selection and its role in evolution.	**Chemistry Patterns of reactivity:** Balancing symbol equations. Combustion, oxidation and decomposition. Metal reactivity series. Reactions of acids and bases. **Physics Satellites:** Electromagnetic spectrum and the inverse law. Natural and artificial satellites and observing Earth from Space.	**Biology Adaptations, cell specialisation and microscopes:** Life processes and the adaptations needed to fulfil these in extreme conditions. Microscope work and calculating magnification, object size and image size. Transport in/out of cells through diffusion and osmosis.	**Chemistry Atomic structure and periodicity:** Atomic structure in elements and their isotopes, sub-atomic particles, periodicity and trends within Group 1 alkali metals.	**Physics Magnetism and electromagnets:** Non-contact forces: gravity, the forces between magnets and electrostatic forces. Static electricity and electric fields. Using plotting compasses to represent magnetic fields, Earth's magnetism. The magnetic effect of a current, electromagnets and DC motors.