



Subject: Science

Year Group: 7

Curriculum Intent:

The intent of our Science curriculum is to encourage our students in developing a sense of excitement, exploration and investigation, a love of the subject and of learning. As well as deepening their understanding of science, they can apply their knowledge to the world around them. Science equips students with an ability to use literacy, numeracy and practical techniques interchangeably and bridges the gap between theory and application. This enables students to make the link between science and technology and the impact they both have on our everyday lives. Throughout their Science education, students work independently and in groups to help them develop their individual learning skills and their ability to communicate and share new ideas and methodology with peers.

College Values:

Science equips students with the ability to take stewardship of their learning using investigations and research to draw conclusions. By working in groups students are encouraged to cooperate and collaborate allowing them to engender respect for their own techniques and knowledge as well as that of others. By encouraging a love of both content and scientific methods, Science equips students with transferable skills which will apply to service within their communities.

Knowledge and Skills:

Lab safety, investigation basics, equipment and hazards.

Particle model of solids, liquids and gases. Gas pressure. Changes of state (including conservation of mass and reversibility). Diffusion, properties including density differences between solids, liquids and gases, Brownian motion in gases.

Cells - using a microscope, organelles and functions, plants vs animal cells, diffusion, cells/ tissues/ organs/ systems.

Energy resources and fuels. Comparing energy values of different foods. 9 types of energy, and energy transfers.

Separating substances Pure substances, mixtures, including dissolving,

conservation of mass, reversibility, separating mixtures: filtration, evaporation, distillation and chromatography. "

Reproduction - structure and function of the male and female reproductive systems, menstrual, gametes, fertilisation, gestation and birth.

Electric current as flow of charge, potential difference measured in volts, in series and parallel circuits. Acids, alkalis, indicators, the pH scale, neutralisation. Acidic and basic oxides.

"Fit and healthy - structure and functions of the human skeleton,

biomechanics, the antagonistic muscles, breathing, the effects of recreational drugs."

Forces as pushes or pulls measured in N. Naming forces. Using force arrows in diagrams. Adding forces in one dimension; balanced and unbalanced forces. Hooke's Law.

Ecosystems - variation, adaptations, interdependence in an ecosystem, how organisms affect, and are affected by, their environment.







Christ's College Guildford

Principal: Sarah Hatch. BA (Hons), QTS, PGC, NPQH www.christscollege.surrey.sch.uk



Atoms and molecules. A simple (Dalton) atomic model. Atoms, elements and compounds. Chemical vs Physical changes. Chemical symbols and formulae. Physical and chemical properties of different elements. Periodic Table: periods and groups. Conservation of mass in chemical reactions. Sound -longitudinal waves produced by vibrations, frequencies in hertz (Hz). Echoes, reflection and absorption; sound in different media. Detected by a microphone or the ear drum; auditory range of humans and animals. Ultrasound waves. Water waves as transverse waves - these waves can be reflected & superpositioned. <u>Skills</u> Light a bunsen, plan an investigation, draw a graph. Analyse results, write a conclusion Modelling

Microscopy, comparisons between different cells, tissues and systems.

Analysis and evaluation

Further modelling, use of apparatus, analytical techniques

Investigations and real world ethical debate (contraception, IVF etc)

Wiring a plug (life skill)

Calculations, measuring, chemical safety

Investigative techniques, nutritional analysis, links with PE regarding diet, exercise.

Calculation, predictions, analysis

Assessment:

Students will be assessed during lessons both verbally and with the work they complete. Formal assessment will take place roughly once every three weeks and students will have a test each term (Autumn/Spring and Summer).

Homework:

Homework will consist of glossary (keyword and definitions) learning for each topic. Activities will be set on Seneca (for content coverage) and in the form of homework research tasks and projects.

Cultural Capital:

Sites which are of interest: <u>https://www.pearsonactivelearn.com/app/Home</u> https://www.bbc.co.uk/bitesize/subjects/zng4d2p

