



IBS Level Chemistry – U6

Curriculum Intent

Chemistry is the study of matter, its properties, how and why substances combine or separate to form other substances, and how substances interact with energy. The IB Standard Chemistry course provides stimulating opportunities to appreciate the study and creativity associated with chemistry within a global context.

The course aims for all students to:

- Acquire, apply and use knowledge, methods and techniques that characterise chemistry
 - Develop an ability to analyse, evaluate and synthesise chemistry information
 - Develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities
 - Appreciate the possibilities and limitations of chemistry while becoming critically aware, as global citizens, of the ethical implications of using chemistry
 - Develop and understanding of the relationships between scientific disciplines and their influence on other areas of knowledge
- Promote students' interest in and enthusiasm for the subject.

"I was taught that the way of progress is neither swift nor easy" Marie Curie

Students will learn: -

Autumn Term – Term 1

Individual research investigation. Proton transfer reactions. Electron transfer reactions.

Spring term – Term 2

Organic chemistry

What does excellence look like?

- Carrying out practical processes logically, precisely, and accurately.
- Linking ideas together to answer questions logically and sequenced.
- Generating own linking questions.
- Linking ideas and skills to the IB Core including Theory of Knowledge and IB Approaches to Learning.
- Linking big ideas to answer real life Chemistry problems. For example: Exploration of amphoteric and amphiprotic substances. Application of unfamiliar redox reactions to titration calculations.
- Proficient use of experimental, technological and mathematical Tools for IB Chemistry.
- High standard of IA design, implementation, analysis and evaluation.

Knowledge, understanding & Skills

Term 1:

Knowledge, understanding, application, analysis, and evaluation of: Scientific method, enquiry cycle, research and referencing skills, use of pilot study, formulating a hypothesis, risk assessment, design. Data collection, analysis and evaluation. Theories of acids and base, Bronsted-Lowry acids and bases, conjugate pairs; properties of acids and bases; strong and weak acids and bases. pH scale, ion product constant of water K_w , pH calculations, pH curve for strong acid and strong base neutralisation. Oxidation and reduction processes in terms of oxygen gain/hydrogen loss, electron transfer or change in oxidation number; variable oxidation numbers. Electrochemical cells: voltaic cells; electrolytic cells; explanation in terms of ion flow and electron transfer; voltaic cell diagram convention; experiments on voltaic cells involving two metal-metal ion half cells.

Term 2:

Knowledge, understanding, application, analysis, and evaluation of: Homolytic and heterolytic fission, radical substitution of alkanes by electron sharing; nucleophilic substitution and electrophilic addition by electron-pair sharing; oxidation and reduction of organic compounds.

How will we assess impact?

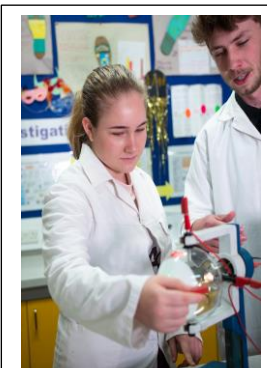
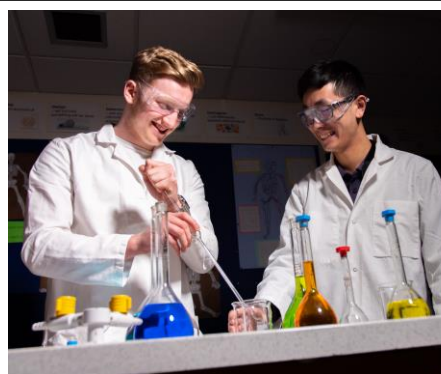
- Peer, self and teacher assessment in lessons
- Previous lesson recap quiz
- Teacher questioning
- Practical skills
- Landmark tasks
- End of Topic tests
- Internal assessment (I.A.)

How can you enhance your learning at home?

- Chemguide
- Isaac chemistry
- Inthinking chemistry
- Royal Society of Chemistry

Example homework tasks

- Learn definitions of key terms.
- Group and independent research projects
- Past examination questions practice
- Practical activity preparation, simulations, and follow-up.



International Opportunities

Visits Programme

Community lectures on international themes

International day across the school

Primary research using student cultural diversity

Within the curriculum

The Chemistry IBS Level curriculum is designed to deepen understanding and appreciation of how our international society makes decisions about world scientific issues. Students can compete in the International Chemistry Olympiad.

Students are encouraged to research each theme beyond lessons, drawing on a worldwide knowledge of the skills, techniques and theoretical understanding required for the further study of Chemical Sciences at an International level.

Nature of Science is learned using global issues from modern science and science history.