Key Stage 5 (13)

Course title: Chemistry B (salters) A-Level

Exam board: OCR

Specification code: H433

Autumn 1 (September – October) to Autumn 2 (October – December)	**Teacher 1 Chemical Industry (CI)** Review of what had been taught in June and July: • aspects of nitrogen chemistry • kinetics • equilibrium and equilibrium constant calculations • effects of factors on the rate and equilibrium yields of reactions; consideration of the best conditions for an industrial process • analysis of costs, benefits and risks of industrial processes. This topic builds upon shapes of molecules (EL) and oxidation state (ES); reviews equilibria (ES) and then moves into quantitative rate calculation from qualitative rate (OZ).
	Teacher 2 Polymers of Life Review what had been taught in June and July: • condensation polymers • organic functional groups • amines and amides • acid–base equilibria • amino acid and protein chemistry • optical isomerism • enzyme catalysis and molecular recognition • the structure and function of DNA and RNA • structural analysis. On the basis of a foundation knowledge built in earlier topics (DF OZ and WM), we move into some biochemistry to teach further condensation reactions, linking to IMFs topic (OZ) for RNA base pairing, amine and amide chemistry, extend understanding of isomers into optical isomerism. Link to the study of IR spectroscopy, we conclude the topic with full spectroscopic analysis of materials.
	Teacher 1 Developing Metals (DM) This topic is started in November: • redox titrations • cells and electrode potentials • d-block chemistry • colorimetry. Having gained an understanding of redox (ES), we apply it to the more challenging ‘d’ block variable oxidation; introducing the idea of quantitative reactivity series (Reduction Potentials) and their measurement; to the chemistry of complex aqueous ions and ligand substitution and how this affects solubility and colour.

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<tr>
<td rowspan="3">Spring 1 (January – February) to Spring 2 (February – March)</td>
<td>Teacher 1 Developing Metals (DM)

This topic is finished in January and February:
• redox titrations
• cells and electrode potentials
• d-block chemistry
• colorimetry.

Having gained an understanding of redox (ES), we apply it to the more challenging ‘d’ block variable oxidation; introducing the idea of quantitative reactivity series (Reduction Potentials) and their measurement; to the chemistry of complex aqueous ions and ligand substitution and how this affects solubility and colour.</td>
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<td>Teacher 2 Colour by Design (CD)

• the chemical origins of colour in organic compounds
• aromatic compounds and their reactions
• dyes and dyeing
• diazonium compounds
• fats and oils
• gas–liquid chromatography
• carbonyl compounds and their reactions
• organic synthesis and polyfunctional compounds.

The final group of organic molecules not studied are the aromatic series. In the context of dyes, we look at conjugation, and what it means to be an aromatic compound. How this affects their reactions – substitution not addition – and examples of transformations. These are linked to the processes needed to make dyes. We link this also to the IMF taught earlier (OZ) to explain why they bind to different cloth types dependant on the nature of the cloth (cottons being carbohydrates; wools being proteins etc).</td>
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<td>Teacher 1 and 2 Oceans

• acid–base equilibria and pH
• solubility products
• dissolving and associated enthalpy changes
• the greenhouse effect
• entropy.
Though this could be taught before Developing Metals, the understanding of pH and equilibria of their reactions is a good final topic since little else relies on it’s understanding. Links go back to equilibria in (CI) and (ES) and patterns of solubility due to cation and anion size and their charge density introduced in (ES).
This section of Oceans also deals with the energy changes associated with the oceans and finishing off thermodynamics with the final sentence that is entropy! Nothing else relies upon this understanding other than reactions driven by disorder change such as EDTA complex formation so works well at the end.</td>
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<td>Summer 1 (April – June) to Summer 2 (June – July)</td>
<td>Revision</td>
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