### Subject: Chemistry

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#### Year 11: Key Learning Constructs to be developed over the academic year

<table>
<thead>
<tr>
<th>Topic</th>
<th>Scheme of Learning Autumn Term</th>
<th>Scheme of Learning Spring Term</th>
<th>Scheme of Learning Summer Term</th>
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</table>
| Topic 1 - 4.7 Organic chemistry | **Topic 1 - 4.7 Organic chemistry**  
4.7.1.1 Crude oil, hydrocarbons and alkanes  
4.7.1.3 Properties of hydrocarbons & combustion  
4.7.1.2 Fractional distillation and petrochemicals  
4.7.1.4 Cracking  
4.7.2.1 Structure and formulae of alkenes  
4.7.2.2 Reactions of alkenes  
4.7.3.1 Addition polymerisation Thermosetting and thermosoftening polymers (from 4.10.3.3)  
4.7.3.2 Condensation polymerisation  
4.7.3.3 Amino acids and 4.7.3.4 DNA | **Topic 2 - 4.8 Chemical analysis**  
4.8.1.1 Pure substances and 4.8.1.2 Formulations  
4.8.1.3 Chromatography- required practical 6, home learning task-4.8.2 Identification of common gases  
4.8.3.1 Flame tests and 4.8.3.6 Instrumental methods and 4.8.3.7 Flame emission spectroscopy  
Forming 4.8.3.2 metal hydroxide ppts  
Testing for anions (4.8.3.3-4.8.3.5)  
Required practical 7- Identifying the ions in an unknown ionic compound | **Topic 4 - 4.10 Using resources**  
4.10.1.1 Using the Earth’s resources and sustainable development inc. order of magnitude calculations  
4.10.1.2 Potable water and 4.10.1.3 Waste water treatment  
Required practical 8- analysis and purification of water samples from different sources  
Recap displacement from y9 and 4.10.1.4 alternative methods and extracting metals  
4.10.2.1 LCA  
4.10.2.2 Ways of reducing the use of resources  
4.10.3.1 Corrosion of metals inc. rusting practical  
Preventing corrosion  
4.10.3.2 Alloys as useful materials  
4.10.3.3 Ceramics and composites  
Review of Haber process & 4.10.4.2 Production and uses of NPK fertilisers |

| Topic 2- 4.8 Chemical analysis | **Topic 2 - 4.8 Chemical analysis**  
4.8.1.1 Pure substances and 4.8.1.2 Formulations  
4.8.1.3 Chromatography- required practical 6, home learning task-4.8.2 Identification of common gases  
4.8.3.1 Flame tests and 4.8.3.6 Instrumental methods and 4.8.3.7 Flame emission spectroscopy  
Forming 4.8.3.2 metal hydroxide ppts  
Testing for anions (4.8.3.3-4.8.3.5)  
Required practical 7- Identifying the ions in an unknown ionic compound | **Topic 3 - 4.9 Chemistry of the atmosphere**  
4.9.2.1 Greenhouse gases and 4.9.2.2 Human activities which contribute to an increase in greenhouse gases in the atmosphere, home learning- review of 4.9.1.1 – 4.9.1.3 from y9 | **Topic 3 - 4.9 Chemistry of the atmosphere**  
4.9.2.1 Greenhouse gases and 4.9.2.2 Human activities which contribute to an increase in greenhouse gases in the atmosphere, home learning- review of 4.9.1.1 – 4.9.1.3 from y9 |

**In the schemes of learning, specification codes are in brackets and practicals are underlined.**
<table>
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<tr>
<th>4.9.2.3 Global climate change and 4.9.2.4 Carbon footprint 4.9.3.1 Atmosphere pollutants from fuels 4.9.3.2 Properties and effects of atmospheric pollutants</th>
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<tbody>
<tr>
<td>Assessment Pieces Paper 1 mock exam</td>
<td>Assessment Pieces Review 2 test on organic chemistry, chemical analysis and environmental chemistry</td>
<td>Assessment Pieces Paper 2 mock exam</td>
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</table>

**Key vocabulary**

**Outside the taught curriculum**
The impact on human activities on the earth and its atmosphere is regularly discussed as a current topic on the news. Students can read the latest news articles to find out more about this topic.

**Suggested reading**
- GCSE Chemistry textbook provided to all students
- GCSE Chemistry textbook on Kerboodle
- Websites such as chemrevise and gcse bitesize