**CNCS**

**A Level Chemistry: Curriculum Overview**

**Rationale**: Throughout the course students will build on their knowledge and understanding of Chemistry that encompasses the three key areas of Chemistry knowledge: Physical, Organic and Inorganic Chemistry. Practical work will be an intrinsic part of the course, allowing students to develop their practical and investigative skills and demonstrate some of the Chemistry concepts being covered.

| **A learner in BTEC Level 3 Applied Science will know/ have studied:** | **A learner in BTEC Level 3 Applied Science will be able to:** |
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| **Physical Chemistry**: Atomic structure, Bonding, Energetics, Kinetics, REDOX reactions, Electrochemistry, Thermodynamics,<br>**Organic chemistry:** Crude oil & alkanes, Halogenoalkanes, Alkenes, Alcohols, Carbonyls, Carboxylic Acids & their derivatives, Amines, Aromatics, Organic analysis & synthesis<br>**Inorganic Chemistry**: Periodicity & Period 3 Oxides, Group 2 metals & their compounds, Transition metals, Aqueous ions in solution<br>They will have carried out practical and investigative work to develop their skills in line with the Core Practical Assessment Criteria (CPAC), in order to achieve a Practical Endorsement to accompany their grade at the end of the course. | Apply a range of practical and investigative approaches, including working safely in a lab, using a range of practical and measuring instruments, collecting, processing and analysing data.<br>They will be able to describe and explain Chemistry concepts in words and apply relevant equations and relationships to solve problems. |

| Year | Term | Outline | Assessment | Home Learning | Key Skills/ End Point |
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| **12** | **1** | **Physical**<br>Knowledge:<br>Atomic structure, Atomic mass, bonding, Amount of substance, energetics,<br><br>**Organic**<br>Knowledge:<br>Crude oil & alkanes.<br><br>**Inorganic**<br>Knowledge:<br>Periodicity (Period 3), Group 2 Metals | **Pit stops**<br>Atomic structure Pitstop 1<br>Atomic Structure 2<br><br>Amount of Substance 1<br>Amount of Substance 2<br><br>Organics Pitstop – Crude Oil & alkanes<br><br>In organic Pitstop – Period 3 & Group 2<br><br>**Required Practical**<br>**1&2**<br><br>**End of term assessment**<br>2 x 45 minute papers<br>Paper 1 – Atomic structure<br>Paper 2 – Amount of substance | Summary notes, practice tasks & questions, exam questions application and revision. | Using knowledge and understanding developed at KS4, students will build on key Chemistry concepts such as atomic structure & bonding. They will begin to develop their practical and investigative skills e.g. by completing a titration. |

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| | **2** | **<u>Physical</u>**<br>Knowledge:<br>Energetics, Kinetics,<br><br>**<u>Organic</u>**<br>Knowledge:<br>Halogenoalkanes, Alkenes,.<br><br>**<u>Inorganic</u>**<br>Knowledge:<br>Group 7 chemistry | **<u>Pit stops</u>**<br><br>Energetics pitstop<br>Kinetic Pitstop<br>REDOX pitstop<br><br>Organics Pitstop – Halogenoalkanes<br>Organics Pitstop - Alkenes<br><br>**<u>Required Practical</u>**<br>**3,5**<br><br>**<u>End of term assessment</u>**<br>2 x 45 minute papers<br>Paper 1 – Kinetics & Energetics. Group 2<br>Paper 2 – Organic | Summary notes, practice tasks & questions, exam questions application and revision. | The second term will build upon the key knowledge from term one and extend the GCSE knowledge to a level 3 standard. They will be introduced to multi step calculations in finding and enthalpy change. They will also learn how to represent organic reaction mechanisms using 'curly arrows.' |
| | **3** | **<u>Physical</u>**<br>Knowledge:<br>Equilibria, REDOX, Rates,<br><br>**<u>Organic</u>**<br>Knowledge:<br>Alcohols, Organic analysis<br><br>**<u>Inorganic</u>**<br>Knowledge:<br>Group 7 chemistry | **<u>Pit stops</u>**<br>Equilibria Pitstop<br>REDOX pitstop<br>Organic pitstop – Alcohols<br>Group 7 Chemistry Pitstop<br>**<u>Required Practical</u>**<br>**4,6,7**<br><br>**<u>End of term assessment</u>**<br>2 x 90 minute papers (to mirror an AS assessment) | Summary notes, practice tasks & questions, exam questions application and revision. | The final term on year 12 will provide opportunities to revise the material covered for the Summer assessments that will mirror an AS exam structure. Students will also being work from the Y13 program of study on Rates |

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| **13** | **1** | **Physical**<br>Knowledge:<br>Thermodynamics, Electrochemical cells, Equilibria<br><br>**Organic**<br>Knowledge:<br>Carbonyls, Carboxylic acids & derivitives<br><br>**Inorganic**<br>Knowledge:<br>Period 3 elements & their oxides | **Pit stops**<br>Thermodynamics Pitstop<br><br>Electrochemical cells pitstop<br><br>Organic Pitstop – Carbonyls & carb acids<br><br>Pitstop – Period 3 elements<br>**Required Practical**<br>**8, 9**<br><br>**End of term assessment**<br>2 x 90 mins papers covering Y12 work and Y13 topics studies so far | Summary notes, practice tasks & questions, exam questions application and revision. | The Y13 program of study gives students opportunity to review and build on the knowledge and skills developed in Y12 |
| | **2** | **Physical**<br>Knowledge:<br>Acids & bases<br><br>**Organic**<br>Knowledge:<br>Amines, Aromatics<br><br>**Inorganic**<br>Knowledge:<br>Transition metals, | **Pit stops**<br>Acids & bases pitstop<br>Organic pitstop – Amines<br>Organic Pitstop – Aromatics<br>Transition metals pitstop<br>**Required Practical**<br>**10,11**<br><br>**End of term assessment**<br>2 x 2 hour Mock exam | Summary notes, practice tasks & questions, exam questions application and revision. | Students will continue to develop a deeper understanding of A Level Chemistry concepts. In organic chemistry they will begin to create organic synthesis routes based on the mechanisms they have encountered up to now. |
| | **3** | **Physical**<br>Knowledge:<br>Acids & bases<br><br>**Organic**<br>Knowledge:<br>Biochemistry, Organic analysis<br><br>**Inorganic**<br>Knowledge:<br>Reactions of ions in aqueous solution | **Pitstops**<br>Organic pitstop – biochemistry<br>Organic Pitstop – synthesis.<br>Aqueous ions pitstop<br><br>**Required Practical**<br>**12**<br>**Practical endorsement awarded**<br><br>**Terminal exams x 3** | Summary notes, practice tasks & questions, exam questions application and revision. | Students will review work ready to take their 3 external exams |