**Curriculum Overview for Chemistry**

**Year 11**

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| **Half Term 1: unit 6 ( the rate and extend of chemical change) and unit 7 (Organic Chemistry)**Substantive knowledge unit 6:* Describe how changing temperature, concentration, pressure, surface area affects rate of reaction.
* Explain using collision theory the effects of changing conditions temperature, concentration, pressure, surface area on rate of reaction.
* Describe how catalysts impact rate of reaction.
* Link how catalysts impact rate of reaction to reaction profiles.
* Identify the symbol for reversible reactions.
* Link exothermic and endothermic reactions to reversible reactions.

Substantive Knowledge unit 7* Describe how crude oil is formed
* Identify alkanes
* Identify the general formula for an alkane
* Describe fractional distillation.
* Describe the properties of hydrocarbons.
* Explain the properties of hydrocarbons.
* Describe cracking.
* Explain why we do cracking.
* Compare the reactivity of alkanes and alkenes.
* Explain alkene reactions. T
* Describe alcohol reactions. T
* Describe reactions of carboxylic acids. T
* Explain the acidity of carboxylic acids. T
* Describe polymerisation. T
* Describe condensation polymerisation. T
* Describe the structure of an amino acid. T
* Describe the polymerisation of an amino acid. T
* Describe the structure of DNA. T

Disciplinary knowledge unit 6 :* Calculate mean rate of reaction.
* Draw and interpret graphs showing the quantity of product formed or reactant used.
* HT – Draw tangents on graphs to calculate rate of reaction from a gradient
* HT- Predict changes on systems using le chateliers principle.
* HT – Predict the effect a change of concentration of a reactant or product, temperature or pressure has on equilibrium.

**Disciplinary Knowledge unit 7:*** Identify carboxylic acids
* Identify alkenes.
* Identify the general formula for an alkene.
* Identify alcohols.
* Identify the general formula of an alcohol.

Calculate Rf values.Intepret chromatograms | Books | Skim and Scan of source informationDecoding termsEtymology of key terms |
| Speech | Activation energyCatalystCollision theoryEffect of changing concentration on equilibriumEffect of changing pressure on equilibriumEffect of changing temperature on equilibriumEffect of concentration on reaction rateEffect of pressure on reaction rateEffect of surface area on reaction rateEffect of temperature on reaction rateEquilibriumLe Chatelier’s PrincipleRate of reactionReversible reactionAddition polymerisationAlcoholsAlkanesAlkenesAmino acidsCarboxylic acidsCatalytic crackingCombustionComplete combustionCrude oilCondensation polymerisationCrackingDNAEstersFermentationFractional distillationHomologous seriesHydrocarbonsNucleotidesPolyestersPolymersPolypeptideRepeat unitSteam cracking |
| Checklist RTL | Recall questions to start every lessonRecall testReview sheetEnd of unit assessment |
| Home | Revision Card preparation for every lessonRecall testReview sheetRepetition of use of revision cards for end of unit assessment |
| **Half Term 2: Chemical analysis****Substantive Knowledge:**Describe how we test for pure substances. Describe the use of formulation. Identify examples of formulations. Describe the chromatography required practical. Explain how paper chromatography separates mixtures. Describe the test for hydrogen. Describe the test for oxygen Describe the test for chlorine. Describe the test for carbon dioxideTRIPLE ONLY Describe how to test for positive metal ions. Identify the results for the positive metal ion test. Describe how to use sodium hydroxide to test for some metal ions. Identify the results of the sodium hydroxide test,. Describe the test for carbonates. Describe the test for halides. Identify the halide test results. Describe the test for sulfates. State advantages of instrumental analysis compared to chemical tests. Describe flame emission spectroscopy. Interpret an instrumental results**Disciplinary Knowledge:**Calculate Rf values.Intepret chromatograms | Books | Skim and Scan of source informationDecoding termsEtymology of key terms |
| Speech | Pure, Boiling point, Mixture, Formulation, Chromatography, Mobile phase, Stationary phase, Limewater, Litmus paperTRIPLE ONLY:Ion, Metal, Precipitate, Instrumental analysis, Flame emission spectroscopy. |
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