Year 13 - OCR A-level (H432) Chemistry

Timing	Unit Title	Key Question	Knowledge	Assessing understanding
Autumn Term 1	**Module 6 Chapter 26** **Carbonyls and carboxylic acids**	**What are the key reactions in carbonyl chemistry?**	• Properties and reactions of aldehydes and ketones • Testing for aldehydes and ketones • Mechanism of nucleophilic addition • Properties and reactions of carboxylic acids • Synthesis of acyl chlorides and esters • Reactions of esters, acyl chlorides and acid anhydrides	**How understanding is assessed** Students will be assessed on their ability to: • Recall the knowledge covered • Explain the chemical phenomena • Interpret graphical and experimental data • Make connections between different areas of understanding. **Skills** • Description • Explanation • Evaluation • Comparison • Planning and carrying out investigations • Chemical calculations **Assessment point information** • Written test • Teacher continuous assessment • Required Practical Activity 9.2 Measuring rate • Required Practical Activity 10.1 Rate and mechanism • Required Practical activity 10.3 Arrhenius plot • Required Practical activity 7.3 (part 1) Identifying organic compounds
	Module 5 Chapter 18 **Rate of reaction**	**How can we measure how fast a reaction will go?**	• Rate equations, rate constants and order of reaction • Experimental determination of rate equations • Graphical analysis of rate data • Half life • Rate determining step and reaction mechanism • The effect of temperature on rate • Arrhenius plots	
	Module 5 Chapter 18 **Energy and entropy**	**What determines if a reaction will go?**	• Lattice enthalpy and Born Haber cycles • Enthalpy changes in solution and predicting solubility • Entropy • Gibbs Free Energy and feasibility	

	Module 5 Chapter 20 **Acids, bases and pH**	**How can we explain the properties of a range of acids and bases?**	• Acids bases and pH • K_a and K_w • Titrations and indicators • Buffers and buffer calculations,	
Autumn Term 2	**Module 6 Chapter 29** **Analytical techniques**	**How can we determine the structure of organic molecules?**	• Chromatography • 13-C NMR nuclear magnetic resonance spectroscopy • Proton NMR • Combined techniques	**How understanding is assessed** Students will be assessed on their ability to: • Recall the knowledge covered • Explain the chemical phenomena • Interpret graphical and experimental data • Make connections between different areas of understanding. **Skills** • Description • Explanation • Evaluation • Comparison • Planning and carrying out investigations • Chemical calculations **Assessment point information** • Written test • Teacher continuous assessment • Required Practical activity 11.2 pH curves • Required Practical activity 7.3 (part 2) Chromatography

<table>
<tr><td></td><td>Module 5 Buffers and neutralisation Chapter 21</td><td>How do buffers work to control pH?</td><td>Neutralisation
What is a buffer solution
Calculating pH of buffers
Buffer solutions in the body</td><td></td></tr>
<tr><td rowspan="3">Spring Term 1</td><td>Mock Exams</td><td></td><td>Mock exams will cover all of the Chemistry learned during Year 12 and the Autumn Term of Year 13</td><td rowspan="3">How understanding is assessed
Students will be assessed on their ability to:
Recall the knowledge covered
Explain the chemical phenomena
Interpret graphical and experimental data
Make connections between different areas of understanding.
Skills
Description
Explanation
Evaluation
Comparison
Planning and carrying out investigations
Chemical calculations
Assessment point information
Based on two written mock examination papers:</td></tr>
<tr><td>Module 5 Chapter 23 Redox</td><td>How can we use an understanding of redox in titrimetric analysis and in predicting reactions?</td><td>Oxidation number
Reaction stoichiometry and redox titrations
Measuring E^0
Predicting feasibility and extent of reactions</td></tr>
<tr><td>Module 6 Chapter 27</td><td>How is DNA</td><td>Reactions of aliphatic and aromatic amines
Amides</td></tr>
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<tr><td></td><td>Nitrogen chemistry</td><td>bonded? What other molecules are similar?</td><td>• Amino acids, polypeptides and proteins
• Chirality
• Polyesters and polyamides e.g.nylon.</td><td>• Physical and Inorganic chemistry
• Organic Chemistry and Analytical techniques</td></tr>
<tr><td rowspan="2">Spring Term 2</td><td>Module 6 Chapter 28

Organic synthesis</td><td>How can we make useful organic products in the laboratory?</td><td>• Review of practical skills and activities
• Synthetic routes
• Practical processes for synthesis</td><td rowspan="2">How understanding is assessed
Students will be assessed on their ability to:
• Recall the knowledge covered
• Explain the chemical phenomena
• Interpret graphical and experimental data
• Make connections between different areas of understanding.
Skills
• Description
• Explanation
• Evaluation
• Comparison
• Planning and carrying out investigations
• Chemical calculations

Assessment point information

Based on:
• Completed folders for the Practical Endorsement
• Required Practical activity 12 Analysing iron tablets
• Required Practical activity 8.1 Electrochemical cells</td></tr>
<tr><td>Module 5 Chapter 24 Transition metals</td><td>How do transition metals react?</td><td>• What is a transition metal and what are their characteristic properties
• Complex ions and stereoisomerism
• Ligand substitution and precipitation
• Redox and qualitative analysis</td></tr>
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	Mock Exams and revision	**What is the best preparation for your A-level exams**	• Revision and past paper practice	
Summer Term				**How understanding is assessed** Students will be assessed on their ability to: • Recall the knowledge covered • Explain the chemical phenomena • Interpret graphical and experimental data • Make connections between different areas of understanding. **Skills** • Description • Explanation • Evaluation • Comparison • Planning and carrying out investigations • Chemical calculations **Assessment point information** Based on: • Teacher assessment and written tests