

**Unit Overview:** Module 3 – Periodic Table and Energy

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| <b>Half- Term:</b> | <b>AUT 1</b> | <b>AUT 2</b> | SPR 1 | SPR 2 | SUM 1 | SUM 2 | <b>No of Lessons:</b> | <b>33</b> |
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**Key Focus for Unit:***What is the key knowledge being delivered?**What is the intent of this unit?*

The focus of this module is inorganic and physical chemistry, the applications of energy use to everyday life and industrial processes, and current environmental concerns associated with sustainability.

The content within this module assumes knowledge and understanding of the chemical concepts developed in Module 2: Foundations in chemistry. This is important because this module builds upon the knowledge learnt within Module 2

This module provides learners with a knowledge and understanding of the important chemical ideas that underpin the study of inorganic and physical chemistry:

- The periodic table: periodic and group properties
- Enthalpy changes and their determination
- Rates of reaction
- Reversible reactions and chemical equilibrium
- Consideration of energy and yield in improving sustainability

This module has many synoptic links with some of the subject content previously studied in AS (Year 12 - Module 2). This module provides a context for synoptic assessment and the subject content links strongly with the content found in Module 2 as discussed previously. This includes, but is not limited to:

- Atoms, moles and stoichiometry
- Acid and redox reactions
- Bonding and structure

As knowledge and understanding of module 2 will be assumed; examination questions are set that link its content with this module and other areas of chemistry.

**Key Knowledge and Big Ideas:***What **Powerful Knowledge** and **Big Ideas** are explored in this Unit?**How have these progressed from previous learning? What **gaps in knowledge** have you identified from **baselining** and how are they being closed?*

The Big Idea that this topic links to is *Chemical Reactions* – the importance of understanding how chemical reactions are governed by the physical laws of nature is paramount to understanding how this module links to the wider world and can be contextualised.

Student baselines are assessed through retrieval practice in starter questions.

Lessons regularly highlight where synoptic links can be found within Module 3 that point to Module 2

**Unit Assessment:**

*How will this unit be assessed?*

*What is the frequency of assessments – baselines etc?*

Formative assessment:

- 6 mark extended writing tasks
- Assesses powerful knowledge and literacy
- Feedback and response time built into lesson
- Practical Assessment Group (PAGs) activities regularly embedded throughout the scheme of work

Summative assessment:

- 45minutes assessment
- Assessed in practice papers
- Assesses powerful knowledge through past exam questions
- Feedback and response time built into lesson

Homework KS5:

- Weekly Past Paper Questions
- Analysis of experimental data from PAGs
- Assesses powerful knowledge and literacy

| <b><u>Key Skills Explored</u></b>  | <b><u>Vocabulary Selected for DVI</u></b>  | <b><u>Links to Previous Unit</u></b>   |
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| <ul style="list-style-type: none"><li>• Apply investigative approaches and methods to practical work</li><li>• Safely and correctly use a range of practical equipment and materials</li><li>• Visualise physical and chemical processes<ul style="list-style-type: none"><li>• Manipulation of mathematical equations</li></ul></li><li>• Relating observable phenomena to underlying concepts</li><li>• Developing chemical common sense</li></ul> | <ul style="list-style-type: none"><li>• Quantitative</li><li>• Qualitative</li><li>• Percentage</li><li>• Economy</li><li>• Titration</li><li>• Oxidation</li><li>• Substance<ul style="list-style-type: none"><li>• Redox</li></ul></li></ul>   | <ul style="list-style-type: none"><li>• GCSE Chemistry</li><li>• Module 1 – PAGs</li><li>• Module 2 – Foundations in Chemistry</li></ul> |
| <b><u>Links to Careers/Employability</u></b>   | <b><u>How does this unit prepare students for the next unit?</u></b>   |  |
| <ul style="list-style-type: none"><li>• Chemist</li><li>• Doctor/ Dentist</li><li>• Lab Researcher</li><li>• Pharmacist</li><li>• Oil and Gas</li></ul>  | This module provides many opportunities for students to develop mathematical skills, including the use of logarithms and exponents, when studying the content of this section and when carrying out quantitative practical work. This module is the prelude to Module 5 which students will learn in Autumn 1 of Year 13. For students who apply to study university courses such as Chemistry, Biochemistry, Natural Sciences, Engineering, |  |

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| <ul style="list-style-type: none"><li>• Chemical Engineer<ul style="list-style-type: none"><li>• Analytical skills</li></ul></li><li>• Highly desirable course for employers in the financial services</li></ul> | Physics, Mathematics will be at an advantage having succeeded in this module within A-Level Chemistry |
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KO

Black (all)

Higher (Dark green)

Triple (Maroon / burgundy)