# ****Chemistry Year 11 and 12 Scope and Sequence****

This scope and sequence demonstrates non-linear programing of syllabus modules. Teachers are advised to carefully check that all the syllabus outcomes have been addressed and registered in their teaching and learning programs.

This document references the [Chemistry Stage 6 Syllabus](https://syllabus.nesa.nsw.edu.au/chemistry-stage6/) © 2017 NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales.

**Year 11 Term 1**

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| Weeks | Weeks 1-2 | Week 3 | Week 4 | Weeks 5-6 | Weeks 7-8 | Week 9-10 |
| Module | Module 1: Properties and structure of matter | Module 1: Properties and structure of matter | Module 1: Properties and structure of matter | Module 1: Properties and structure of matter | Depth Study assessment task | Module 2: Introduction to quantitative chemistry |
| Inquiry Question/s | IQ1 How do the properties of substances help us separate them? | IQ2 Why are atoms of elements different from one another? | IQ3 Are there patterns in the properties of elements? | IQ4 What binds atoms together in elements and compounds? | Depth study (7 hours) | IQ2 How are measurements made in chemistry? |
| Outcomes | CH11/12-2CH11/12-3CH11/12-4CH11/12-7CH11-8 | CH11/12-2CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-8 | CH11/12-1CH11/12-2CH11/12-3CH11/12-4CH11/12-7CH11-8 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-8 | CH11/12-1CH11/12-2CH11/12-3CH11/12-4CH11/12-7CH11-8 | CH11/12-2CH11/12-4CH11/12-6CH11-9 |
| Assessment | N/A | N/A | N/A | N/A | **Task 1 (Depth study 7 hours)** | N/A |

**Year 11 Term 2**

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| Weeks | Weeks 1-2 | Weeks 3-5 | Weeks 6-7 | Week 8 | Week 9 | Week 10 |
| Module | Module 2: Introduction to quantitative chemistry | Module 2: Introduction to quantitative chemistry and Module 3: Reactive chemistry | Depth Study Non assessable | Module 2: Introduction to quantitative chemistry | Module 2: Introduction to quantitative chemistry | Module 3: Reactive chemistry |
| Inquiry Question/s | IQ3 How are chemicals in solutions measured? | M2 IQ1What happens in chemical reactions? M3 IQ1What are the products of a chemical reaction? | Depth Study (8 hours) | IQ4 How does the ideal gas law relate to all other Gas Laws? | IQ4 How does the ideal gas law relate to all other Gas Laws? | IQ2 How is the reactivity of various metals predicted? |
| Outcomes  | CH11/12-2CH11/12-4CH11/12-5CH11/12-6CH11-9 | CH11/12-1CH11/12-2CH11/12-4CH11/12-6CH11-9 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-10 | CH11/12-2CH11/12-3CH11/12-4CH11-10 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-6CH11-10 | CH11/12-2CH11/12-3CH11/12-4CH11-10 |
| Assessment | N/A | N/A | **Non assessable depth study (8 hours)** | N/A | **Task 2 Practical assessment** | N/A |

**Year 11 Term 3**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Weeks | Week 1 | Week 2 | Week 3 | Weeks 4-5 | Weeks 6-7 | Week 8-9 | Week 10 |
| Module | Module 3: Reactive Chemistry | Module 3: Reactive Chemistry | Module 4: Drivers of reactions | Module 4: Drivers of reactions | Module 4: Drivers of reactions | Consolidation  | N/A |
| Inquiry Questions | IQ2 How is the reactivity of various metals predicted? | IQ3 What affects the rate of a chemical reaction? | IQ1 Energy Changes in Chemical Reactions | IQ2 Enthalpy and Hess’s Law | IQ3 Entropy and Gibbs Free Energy | N/A | N/A |
| Outcomes | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-10 | CH11/12-1CH11/12-2CH11/12-3CH11/12-4CH11/12-7CH11-10 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-11 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-11 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-11 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-11 | All |
| Assessment | N/A | N/A | N/A | N/A | N/A | N/A | **Task 3 Formal written examination** |

Year 12 (Term 4 of Year 11)

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| Weeks | Weeks 1-2 | Week 3 | Week 4 | Week 5 | Weeks 6-7 | Week 8-10 |
| Module | Module 7: Organic Chemistry | Module 7: Organic Chemistry and Module 8: Applying chemical ideas | Module 7: Organic Chemistry | Module 7: Organic Chemistry and Module 8: Applying chemical ideas | Module 8: Applying chemical ideas | Depth Study |
| Inquiry Question/s | IQ1 NomenclatureIQ2 Hydrocarbons | M7 IQ1 NomenclatureM7 IQ3 Reactions of hydrocarbons andM8 IQ2 Analysis of organic substances (C=C) | IQ1 NomenclatureIQ4 Alcohols | M7 IQ1 Nomenclature M7 IQ4 Alcohols M7 IQ5 Alcohols, ketones, aldehydes, and carboxylic acidsM8 IQ2 Analysis of organic substances (OH and COOH) | IQ2 Instrumental analysis of organic compounds | Depth Study( 9 hours)  |
| Outcomes | CH11/12-1CH11/12-3CH11/12-4CH11/12-7CH11-14 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-14 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-14 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-14 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-15 | CH11/12-1CH11/12-4CH11/12-5CH11/12-6CH11/12-7CH12-14CH12-15 |
| Assessment | N/A | N/A | N/A | N/A | N/A | **Task 1 Depth study (9 hours)** |

Year 12 Term 1

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| Weeks | Weeks 1-3 | Week 4-5 | Week 6-7 | Week 8-9 | Week 10 |
| Module | Module 7: Organic Chemistry and Module 8: Applying chemical ideas | Module 5: Equilibrium  | Module 5: Equilibrium | Module 8: Applying chemical ideas | Module 5: Equilibrium and Module 8: Applying chemical ideas |
| Inquiry Question/s | M8 IQ3 Chemical synthesesM7 IQ5 Amines, amides, esters, soaps M7 IQ6 polymers  | IQ1 Static and dynamic equilibrium and IQ2 Factors that affect equilibrium | IQ3 Calculating the equilibrium constant | IQ3 Chemical synthesis equilibrium case studies | M5 IQ4 Solution equilibria M8 IQ1 Analysis of inorganic substances |
| Outcomes | CH11/12-2CH11/12-3CH11/12-4CH11/12-6CH11/12-7CH11-14 | CH11/12-1CH11/12-4CH11/12-5CH11/12-6CH11/12-7CH11-12 | CH11/12-4CH11/12-5CH11/12-6CH11/12-7CH11-12 | CH11/12-1CH11/12-2CH11/12-3CH11/12-4CH11/12-7CH11-12 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-6CH11/12-7CH11-12 |
| Assessment | N/A | N/A | N/A | N/A | N/A |

Year 12 Term 2

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| --- | --- | --- | --- | --- | --- |
| Weeks | Weeks 1-3 | Week 4 | Week 5-6 | Weeks 7 | Weeks 8-10 |
| Module | Module 5: Equilibrium and Module 8: Applying chemical ideas | Task 2 | Module 6: Acid/base reactions  | Module 6: Acid/base reactions  | Module 6: Acid/base reactions  |
| Inquiry Question/s | M5 IQ4 Solution equilibriaM8 IQ1 Analysis of inorganic substances Ions, colourimetry and UV vis, AAS | Task 2: Identifying unknowns | IQ1Acids/bases and theories | IQ2 Acids/bases and pH | IQ3 Quantitative analysis |
| Outcomes | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-6CH11/12-7CH11-12 | CH11/12-1CH11/12-2CH11/12-3CH11/12-5CH11/12-6CH11/12-7CH11-12 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-13 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-13 | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-13 |
| Assessment |  | **Task 2 Research skills in planning, conducting and analysing information** |  |  |  |

Year 12 Term 3

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Weeks | Week 1-2 | Week 3-4 | Week 5 | Week 6 | Weeks 7 | Week 7-8  | Weeks 9-10 |
| Module | Module 6: Acid/base reactions Task 3  | Module 6: Acid/base reactions and Module 8: Applying chemical ideas | Module 6: Acid/base reactions  | Module 6: Acid/base reactions  | Module 6: Acid/base reactions and Module 8: Applying chemical ideas | Trial examination period | Consolidation and/or depth studies |
| Inquiry Question/s | M6 IQ2 theories and applicationsTask 3: quantitative analysis | M8 IQ1 gravimetric and precipitations titrations | M6 IQ3 Quantitative analysis: application | M6 IQ3 Quantitative analysis: buffers  | M8 IQ3 Chemical synthesis case studies | All | N/A |
| Outcomes | CH11/12-1CH11/12-3CH11/12-4CH11/12-5CH11/12-7CH11-13 | CH11/12-1CH11/12-2CH11/12-3CH11/12-4CH11/12-5CH11-13CH11-15 | CH11/12-1CH11/12-2CH11/12-3CH11/12-5CH11-13 | CH11/12-1CH11/12-2CH11/12-3CH11/12-5CH11-13 | CH11/12-1CH11/12-2CH11/12-3CH11/12-5CH11-13 | All | CH11/12-1CH11/12-2CH11/12-3CH11/12-5CH11/12-7CH11-13 |
| Assessment | **Task 3 First hand practical skills: conducting investigations, processing and analysing data** | N/A | N/A | N/A | N/A | **Task 4 Formal written examination** | **Non-assessable depth study (6 hours)**  |