



# CHEMISTRY CURRICULUM MAP

## FURTHER STUDY

Chemistry university  
study  
Post-graduate study

## CAREER PATHS

Researcher, Forensic  
Scientist, Biochemist,  
Education and Training

## SKILLS

Critical analysis,  
interpretation, evaluation

Assessment: full range of  
examination papers  
covering all the content on  
the course

1st y13 mock. 2 x y12  
paper with benzene,  
rates, equilibria, and  
amines questions  
included

1 Early entry paper. 60  
marks  
Content taken from year  
12+ Benzene and rates  
topics

### Revision and Examination Practice

Assessment: Two further short  
answer assessments each 30 or  
40 marks. Made up of a range of  
short answer questions from  
bonding, organic chemistry, the  
periodic table, alkenes, acids,  
synthetic routes and analysis,  
moles, alcohols and haloalkanes;  
a synoptic assessment drawing  
from the same content.

End of Year exams consisting of one breadth  
and one depth paper. The assessment content  
covers: enthalpy and rates of reaction, bonding,  
organic chemistry, the periodic table, alkenes,  
acids, synthetic routes, moles, alcohol,  
haloalkanes and analysis.

### Redox and Synthesis

- Single half equations
- Reducing and oxidising agents
- Measuring voltage in electrochemical cells
- Electrochemical series and reactivity
- Ligands
- Reflux and Distillation
- GC-MS
- Merging two or more half equations
- Redox titration calculations for familiar redox titrations
- Complex ions
- Transition element precipitations
- Types of chemical reactions
- Carbon and Hydrogen NMR environments

### Acids and Bases Nitrogen Compounds

- Condensation polymers
- Basic structure of amino acids
- Chiral isomers
- Conjugate acid-base pairs
- How zwitterions are formed
- naming of polyesters and polyamides
- Amino acids formation to proteins
- Converting between pH and concentration for strong acids
- The concentration of strong bases using Kw
- Multistep synthetic routes - including conditions and products

### Enthalpy and haloalkanes

- Bond enthalpy
- Energy profile diagrams for endo/exothermic reactions
- Drawing Hess's law cycles
- Enthalpy of formation
- Enthalpy of combustion
- Nucleophilic substitution
- Hydrolysis
- Global warming
- Enthalpy of reactions

### Rates, equilibria, synthesis and analysis

- Rates of reaction
- Boltzmann distribution graphs and catalysts
- Calculating rates
- Le chatelier's principle and equilibria
- Kc and calculation practice
- Organic synthesis
- Reflux and distillation
- Mass spectroscopy
- Infra red spectroscopy
- Combined techniques

### Rates and Enthalpy Benzene and Carbonyls

- Reactivity of Phenol compared to benzene
- Disproving Kekule's model of benzene
- Monitoring of a rates practical and collecting data
- Use of IT software to analyse data

YEAR  
13

### Practical activities

12 assessed practical activities  
across the course assessing  
practical capabilities

End of topic assessments  
throughout the year to  
assess in topic ability of  
students

### Periodic table, alkanes, alkenes

- Periodicity
- Ionisation energy
- Group 2
- Halogens (group 7)
- Displacement reactions
- Disproportionation
- Electrophilic addition
- Markownikoff's rule
- Addition polymers
- Naming alcohols
- Reactions and properties of alcohols

### Acids, redox, and organic chemistry

- Concentration
- Neutralisation reactions
- Titrations
- Titrations calculations
- Nomenclature
- Isomerism
- Free radical substitution
- Combustion

### Atomic structure, bonding and shapes

- Different types of formula
- Electron orbitals
- Shapes of molecules
- Different types of formula
- Electron orbitals
- Dative bonds
- Exemptions to the Octet rule
- Amounts and the mole
- Intermolecular forces

YEAR  
12

Assessment: Three assessments  
each 40-50 marks. Made up of a  
range of questions from periodic  
table, alkanes, and alkenes  
content.

Assessment: Two short answer  
assessments each 40-50 marks.  
Synoptic assessments made up of a  
range of exam style questions on the  
content and skills from acids, redox  
and organic chemistry

Assessment: Transition test - 30 marks of  
short answer questions based on the  
transition work.

Starter questions ensure recall

### SCIENCE SKILL

Scientific knowledge and  
conceptual understanding

### SCIENCE SKILL

The nature, processes and  
methods of science

### SCIENCE SKILL

Analysis, evaluation and  
measurement

### SCIENCE SKILL

Experimental skills and  
investigations