

Syllabus Outline

Cambridge Pre-U
CHEMISTRY

Cambridge
Pre-U

For examination in 2010, 2011, 2012



UNIVERSITY *of* CAMBRIDGE
International Examinations

Cambridge Pre-U Overview

Cambridge Pre-U is an exciting qualification for 16-19 year olds who want to go to university. It equips students with the skills they need to make a success of their undergraduate studies:

- a solid and coherent grounding in specialist subjects at an appropriate level;
- the ability to undertake independent and self directed learning;
- the ability to think laterally, critically and creatively and communicate effectively.

The Cambridge Pre-U Principal Subject in Chemistry is a stand-alone qualification, with all components assessed at the full Cambridge Pre-U standard at the end of a two-year programme of study. There are no unit retakes. Cambridge Pre-U Principal Subjects are certificated separately. They are fully compatible with A Levels and may be taken in combination with them.

Reporting of Achievement

Achievement is reported on a scale of nine grades: Distinction 1, 2 and 3, Merit 1, 2 and 3 and Pass 1, 2 and 3. The Distinction 3 standard is aligned to that of Grade A and the Pass 3 is aligned to that of Grade E at A Level. Distinction 1 reports achievement above the new A* grade. The intention is to differentiate more finely and extend reporting at the top end, while keeping the grading scale accessible to the full range of ability currently achieving passes at A Level.

UCAS Tariff Points

The table shows the UCAS tariff awarded to each Cambridge Pre-U Principal Subject Grade and how this compares with the tariff for A Level.

The tariff reflects the additional content within each syllabus and the linear assessment (terminal examinations at full Pre-U standard).

Universities which normally ask for three A grades at A Level might therefore consider Cambridge Pre-U offers involving a combination of Distinction 3 and Merit 1. Other offers may include asking for a Merit 2 in place of a B, Merit 3 or Pass 1 for a C, Pass 2 for a D and Pass 3 for an E.

Cambridge Pre-U Band	Cambridge Pre-U Grade	Cambridge Pre-U Principal Subject Tariff	Equivalent A Level Tariff
Distinction	1	tbc	n/a
	2	145	(A*) 140
	3	130	(A) 120
Merit	1	115	
	2	101	(B) 100
	3	87	
Pass	1	73	
	2	59	
	3	46	(E) 40

For more details, please go to www.cie.org.uk/qualifications/recognition.

Common characteristics of Cambridge Pre-U syllabuses

- **Design:** focused on the development of high level knowledge, understanding and skills to prepare for university and beyond, through extensive consultation with teachers/students and universities.
- **Stretch:** built into syllabus content (380 guided learning hours and challenging concepts), assessment (open ended questions) and grading outcomes (finer differentiation at the top end).
- **Innovation:** new approaches to subjects, greater freedom in subject combination, new topics, new methods of delivery and new forms of assessment.
- **Progression in learning:** Cambridge Pre-U builds on prior knowledge gained at 14-16, where appropriate and develops broad generic skills (independent study and research skills). Students are better prepared for undergraduate study.
- **Linearity:** assessment at the end of the course makes for greater coherence in teaching and learning.

Feedback from Schools

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Increased focus and motivation in year 12 pupils

Richer, more coherent educational experience

Encourages wider reading

More independent inquiry and learning

Opportunity to develop and pursue own academic interests

Greater scope for upper ability pupils to distinguish themselves

More time and support available for lower ability pupils

Greater maturity at examination time”

Cambridge Pre-U Chemistry Scheme of Assessment

The Cambridge Pre-U Certificate in Chemistry tests candidates' understanding in relatively unfamiliar contexts. Questions cross the boundaries of different fields of chemistry.

Four externally set and marked compulsory components plus the matriculation 'can do' tasks.

Examinations take place at the end of the two-year course and a single grade is awarded. Individual components cannot be retaken.

Paper 1. Multiple Choice.

Paper 2. Long structured questions.

Paper 3. Short and long answer questions.

Paper 4. The Practical covers both qualitative and quantitative analysis.

Curriculum content

Cambridge Pre-U Chemistry offers a practical and theoretical approach to the teaching of chemistry with the emphasis being on the ability to apply the principles of chemistry in unfamiliar contexts.

New Topics

This syllabus contains some completely new topics, which have not been examined at this level before. They enable students to develop an important insight into chemical processes and help to rationalise new and unfamiliar compounds and reactions. The new topics are:

- van Arkel diagrams,
- functional group level,
- carbon-13 NMR,
- antibonding molecular orbitals.

Resource materials have been developed especially for these topics.

Physical Chemistry

Candidates gain insight into the structure of atoms and molecules and the forces between them, and the theory and measurement of enthalpy changes. Later, candidates are exposed to the driving forces of chemical reactions, the mechanisms of reactions and how their rate is studied.

Inorganic Chemistry

Candidates gain an understanding of the three main types of bonding within the framework of electronegativity and in the continuum of the van Arkel diagram. The course enables them to rationalise a body of descriptive chemistry in terms of group and periodic trends and to develop knowledge and understanding of the structure, isomerism and redox properties of transition metal complexes. Candidates should also gain an appreciation of three-dimensional relationships in crystal structures.

Organic Chemistry

This section equips candidates with the tools to understand organic reactions through the framework of the functional group level to suggest reagents and conditions for the transformations they have studied when encountered in unfamiliar reaction schemes. Candidates also consider the 3-dimensional nature of organic reactions in order to understand the mechanisms of organic reactions. Stereochemistry is an important aspect of this section.

Analysis

Candidates gain insight into the physical background of spectroscopic techniques and the skills to interpret spectra without relying on tables of data. They should also acquire an appreciation of molecular symmetry, and in particular, its importance in carbon-13 NMR. Candidates are also expected to develop their ability to interpret measurements and observations in classical laboratory analytical techniques.

Support and Resources

CIE offers a programme of Cambridge Pre-U INSET training for teachers accompanied by support materials on a dedicated Cambridge Pre-U website.

Full syllabus details are at www.cie.org.uk/cambridgepreu

Specimen assessment materials are available from: international@cie.org.uk



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