

Syllabus Outline

Cambridge Pre-U
PHYSICS

Cambridge
Pre-U

For examination in 2010



UNIVERSITY of CAMBRIDGE
International Examinations

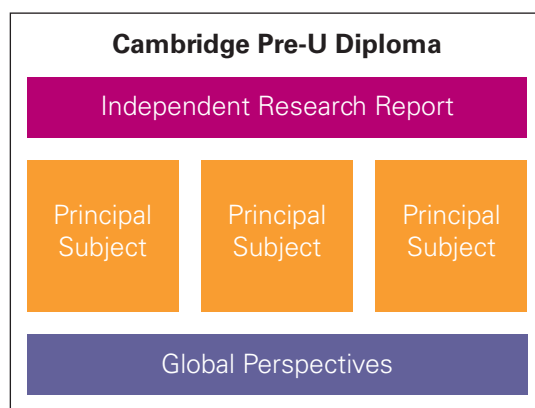
Cambridge Pre-U Overview

Cambridge Pre-U equips students with the skills they need to make a success of their studies at university:

- 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.

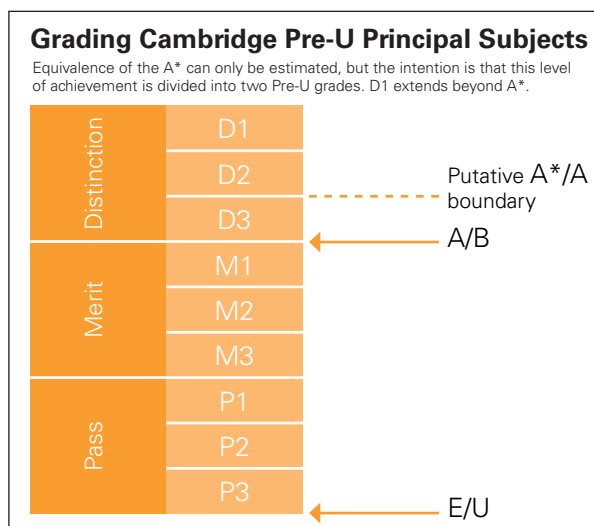
Cambridge Pre-U Certificate in Physics is a stand-alone qualification, certificated separately.

Students can combine it with other individual Principal Subjects and core components (Global Perspectives, Independent Research Report) to gain the Cambridge Pre-U Diploma.



Common characteristics of Cambridge Pre-U syllabuses

- **Stretch:** built into syllabus content (challenging concepts), assessment (open-ended questions) and grading outcomes (finer differentiation at the top end).
- **Innovation:** new approaches to subjects, new topics, new methods of delivery and new forms of assessment.
- **Progression in learning:** building on prior knowledge gained at 14-16, where appropriate.
- **Linearity:** assessment at the end of the course makes for greater coherence in teaching and learning, by freeing up time currently used in module examinations and retakes, and by giving teachers the freedom to structure their courses in the most appropriate way for their students.



Cambridge Pre-U offers a joined-up approach to assessment, making possible a coherent approach to teaching and learning.

Reporting of Achievement

Achievement is reported on a scale of nine grades: D1 (Distinction 1), D2, D3, M1 (Merit 1), M2, M3, P1 (Pass 1), P2, P3. The grade D1 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.

Cambridge Pre-U Physics

Assessment Objectives

Candidates will be expected to:

AO1	demonstrate knowledge and understanding of the syllabus content
AO2	analyse, interpret and apply learned and new information in a variety of contexts
AO3	plan and perform practical investigations, analyse and evaluate results

Scheme of Assessment

For the Cambridge Pre-U qualification in Physics, candidates take three written examination papers and submit a personal investigation at the end of the two-year course. Candidates must also have completed all the Matriculation can-do tasks.

Component	Name	Duration	Weighting(%)	Type of Assessment
0	Compulsory Matriculation	–	–	School-based 'can-do' tasks
	Although there is no weighting associated with the compulsory matriculation can-do tasks, these must have been completed in order for CIE to be able to make the Cambridge Pre-U award.			
1	Part A Multiple Choice	1h 15m	20	Multiple Choice Paper, externally set and marked. 40 questions.
2	Part A Written Paper	2h	30	Written Paper. Two sections. Externally set and marked.
	Section A: Structured questions crossing the boundaries of the different fields of Physics covered in Part A of the syllabus and requiring application of Part A knowledge and understanding to unfamiliar contexts. Section B: Based on pre-release material on an applied Physics topic.			
3	Part B Written Paper	3h	35	Written Paper. Two sections. Externally set and marked.
	Section A: Primarily structured questions focused on Part B of the syllabus. This section may also contain an unstructured question requiring candidates to perform extended calculations and/or a question requiring the analysis of experimental data. Section B: Six longer questions, each focused on either a mathematical or a philosophical approach to Physics. Candidates must answer three questions.			
4	Personal Investigation	(20h)	15	Project report, internally marked, externally moderated.
	This coursework component will consist of a research project. Candidates will be required to perform an individual investigation of a practical problem of their own choosing and agreed by the teacher.			

Curriculum content

Cambridge Pre-U Physics provides opportunities for illustrating the use of Physics in medicine, biophysics, engineering, space exploration, transport, architecture, robotics, communications, global energy solutions, environmental issues, geology and agriculture.

This syllabus derives from a desire to produce academic rigour in Physics while offering two enhancing viewpoints: a stress on mathematical reasoning while fostering an historical and philosophical perspective.

The course enables students to reflect on the development and impact of philosophical, historical, social and ethical ideas in Physics. It also encourages mathematically competent students to enhance vitally important multi-step mathematical problem-solving skills in an intellectually satisfying, challenging and relevant way.

Part A

Mechanics
Gravitational fields
Deformation of solids
Energy concepts
Electricity
Waves
Superposition
Atomic and nuclear
Quantum ideas

Part B

Rotational Mechanics
Oscillations
Electric Fields
Gravitation
Electromagnetism
Special Relativity
Molecular kinetic theory
Nuclear Physics
The Quantum Atom
Interpreting Quantum Theory
Astronomy & Cosmology

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