

# **Briefing Paper for University Admissions Staff Worldwide**

## **General Qualifications**

**Ordinary Level (O Level)**  
**International General Certificate of Secondary Education (IGCSE)**  
**International Certificate of Education (ICE)**  
**Higher International General Certificate of Secondary Education  
(HIGCSE)**  
**GCE Advanced and Advanced Subsidiary Levels (AL and AS)**  
**Advanced International Certificate of Education (AICE)**

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# CONTENTS

<b>Background</b>	<b>3</b>
<b>Qualifications Usually Sat in the Last Two Years of Compulsory Education</b>	<b>4</b>
GCE Ordinary Level	4
IGCSE	4
ICE	4
<b>Post-16 Qualifications</b>	<b>5</b>
A and AS Level	5
AICE	5
HIGCSE	6
<b>UK University Entrance Guidance</b>	<b>7</b>
<b>Syllabus Synopses</b>	<b>8</b>
Mathematics	8
Sciences	11
Modern Foreign Languages	14
English	15
History	17
<b>Contact Details for Further Information</b>	<b>18</b>



## Background

The University of Cambridge (established in 1207) is one of the oldest and most distinguished universities in the world. Its relationship with the US goes back to 1636 when one of its senior members, John Harvard, founded Harvard University at Cambridge, Massachusetts. Cambridge has consistently been the leading United Kingdom university in terms of teaching and research, and is the most competitive for entry at undergraduate level.

University of Cambridge International Examinations (CIE) is part of the University of Cambridge Local Examinations Syndicate (UCLES), a department of the University of Cambridge which has been carrying out educational assessment internationally since 1863. UCLES also produces school examinations in the UK and tests English for speakers of other languages. Each year millions of candidates sit for Cambridge examinations in over 150 countries worldwide.

In England the minimum school-leaving age is 16, after 11 years of compulsory education. Entry to higher education begins at age 18, after 13 years of education. As a result, honours degree programmes in English universities run for three years rather than four. A further consequence of the two-year gap between the end of compulsory schooling and the beginning of university education has been the development of a two-tier public examination system for 16 and 18 year olds.



## Qualifications Usually Sat in the Last Two Years of Compulsory Education

### GCE Ordinary Level

Beginning in 1951, the two-tier system took the form of the General Certificate of Education at Ordinary Level (O Levels) and Advanced Level (A Levels). O Levels are designed for 14 to 16 year olds. O Level courses are renowned for developing vital educational skills, including the recall of knowledge, problem solving, decision making, evaluation and investigative skills, making them an ideal foundation for higher level courses such as A and AS Levels. They are established qualifications that keep pace with educational developments and trends.

International O Levels are recognised throughout the world, by academic institutes and employers, as a mark of quality and evidence of real ability. They have exactly the same value in admitting students to institutes of Further Education and employment as the UK equivalent of GCSE. Students typically study seven to nine subjects in one sitting. Assessment usually takes the form of a final examination and grades A to E are considered pass grades.

### IGCSE

In 1988, O Levels were replaced in England by the General Certificate of Secondary Education (GCSE). At the same time, Cambridge agreed to make special provision for the growing number of international schools that were being established throughout the world in order to cater for children of diplomats and the increasingly mobile workforce of international corporations. This was based on the GCSE and named the International General Certificate of Secondary Education (IGCSE).

The courses are divided between five groups:

- Languages
- Sciences
- Mathematics
- Humanities and Social Sciences
- Creative, Technical and Vocational

Passing grades for IGCSE exams range from A\* to G, with A\* being the highest. Assessment may include coursework, final examination, practical and oral tests. The qualification is viewed by UK universities as being the direct equivalent of the UK GCSE at all grades. Five passes at grade C or higher would indicate a student's readiness to begin higher level pre-university programmes such as A or AS Levels.

Since its first examination in 1988, IGCSE has grown to an annual candidate entry of over 90,000 and over 300,000 subject entries. It is taken not only in international schools, but also in large numbers of both public and private schools where there is a genuine desire to give an international perspective to the education offered, where they cater for a multicultural or multilingual student body, or simply where they wish to raise educational standards and to have a recognised international scale against which to measure their performances.

### ICE

If a student passes seven IGCSE examinations with two being from the language group, one from each of the other four groups and one more from any of the five groups, then they will qualify for an International Certificate of Education (ICE) Diploma. This diploma is awarded at one of three levels – Distinction, Merit or Pass – depending upon the grades earned on the seven examinations.



## Post-16 Qualifications

### A and AS Level

Advanced Level qualifications provide a passport to move into higher education or employment. The subject content of each of the new CIE A Level syllabuses (first examined in 2002) has been subdivided into two parts: the AS syllabus content which is expected to be covered in the first half of the course (first examined 2001), and part two of the syllabus commonly referred to as 'A2'. This flexible approach enables students to choose between three main options:

- Take all A Level components in the same examination session at the end of a course of study, usually at the end of the second year
- Follow a staged assessment to an A Level by taking the AS qualification in one examination session, and the A2 assessment in a subsequent session
- Take the AS qualification only – either at the end of a one-year or two-year course.

NOTE: The A2 examination cannot be sat as a standalone qualification.

Pass grades for both AS and A Level are A to E which can be directly related to the UK A/AS Level grades (see page 7 for further details). Assessment may include coursework, final examination, practical and oral tests. Students applying for university will typically follow four to five AS courses in their first year of study and then continue with three subjects to the full A Level in their second year.

A selection of syllabus synopses for these qualifications can be found towards the end of this paper.

### AICE

AICE has been developed at the request of schools that wanted a broader-based alternative to A Levels while retaining the A Level depth of study. It allows students the option to broaden their studies from the traditional three subjects at A Level to as many as six subjects at AS Level when pursuing an AICE Diploma

The syllabuses are divided into four groups:

- Group A: Mathematics and Sciences
- Group B: Languages
- Group C: Arts and Humanities
- Group D: Research Projects

AICE is a group award that requires the study of subjects drawn from three curriculum areas plus the option of research projects in two subject areas. The AICE Diploma draws upon the full portfolio of Cambridge's post 16-provision (A Level, AS Level and a smaller half-credit programme in Maths or English unique to AICE). The individual choice of subjects within these areas is designed to provide a flexible, comprehensive and integrated curriculum programme.

A candidate needs to take and pass subjects equivalent to a minimum of 6 credits to obtain the AICE Diploma. The credit rating of counting qualifications is:

- A Level = 2
- AS Level = 1
- AICE Half Credit = 0.5
- Research Projects = 1.

The AICE Diploma is awarded on the basis of a points system, as shown in the table below.

Double Credit Study A Level		Full Credit Study AS Level		Half Credit Study AICE Half Credit	
Grade	Points	Grade	Points	Grade	Points
A	120	A	60	A	30
B	100	B	50	B	25
C	80	C	40	C	20
D	60	D	30	D	15
E	40	E	20	E	10



Three levels of AICE Diploma are awarded: Pass, Merit and Distinction. Candidates who score 320 points and above will be awarded a Distinction, 220-315 points a Merit and 120-215 points a Pass. Where a student takes more than the minimum number of subjects for the AICE Diploma, the best results which satisfy the subject group requirements will count towards the award.

### **HIGCSE**

HIGCSE has been designed to meet the needs of Senior Secondary education in Southern Africa where a four-year degree is the norm. Essentially the HIGCSE curriculum is the extended curriculum of IGCSE (core and supplement) plus additional content studied to greater depth. The standard is typically one year above IGCSE. It is graded 1 (high) to 4. Grades 1 to 3 have been accepted for undergraduate admission in the Republic of South Africa.



## UK University Entrance Guidance

Entry to UK universities is usually through UCAS (Universities and Colleges Admissions Service for the UK) and will often be on the basis of a tariff. This system was introduced in 2002 and allows admissions staff to express entrance requirements and make conditional offers to students before their examination results are published. The tariff for A and AS Levels is as follows:

AS Level	Score	A Level	Key Skills
	120	A	
	100	B	
	80	C	
	72		
A	60	D	
B	50		
	48		
	42		
C	40	E	
	38		
	35		
D	30		Level 4*
	28		
E	20		Level 3*
	17		
	13		
	10		Level 2*

\* Key Skills scores are for individual Key Skills Units. Holders of the Cambridge International Diplomas in IT Skills or ICT could be considered to have fulfilled their ICT Key Skills requirements.

### NOTE:

- Points scores can be aggregated from different qualifications, e.g. A Level and AS Level.
- There is no ceiling to the number of points which can be accumulated, thereby recognising the full breadth and depth of students' achievements.
- There will be no double counting, e.g. students cannot count a grade for an AS Level if they then go on to complete the full A Level and gain a pass grade.

It is not obligatory for Higher Education to use the tariff but they are encouraged to do so. Entry requirements expressed as points scores may also be qualified to require a minimum level of depth, for example, two A Level passes and/or achievement in specified subject, e.g. 100 points or grade B in Mathematics A Level.

For further information on entrance to UK universities please consult the UCAS website at [www.ucas.com](http://www.ucas.com).



## Syllabus Synopses

### Mathematics

The following certifications are available:

- AS Mathematics
- AS Higher Mathematics
- AICE Statistics (half an AS)
- A Level Mathematics
- A Level Further Mathematics

#### AS MATHEMATICS

Assumes knowledge of:

- IGCSE Mathematics syllabus (core and supplemental)

Requires mastery of:

- Topics/themes from the compulsory Pure Mathematics 1 unit
- One optional unit: Pure Mathematics 2, or Mechanics 1, or Probability and Statistics 1.

The following compulsory topics and themes for each unit are:

<b>Pure Mathematics 1</b>
Quadratic Polynomials
Functions
Graphs and Coordinate Geometry
Circular Measure
Trigonometrical equations, notations, identities, graph sine, cosine and tangent functions
Vectors
Series to include Arithmetic and Geometric Progressions
Differentiation
Integration

<b>Pure Mathematics 2</b>
Algebraic equations and inequalities, factor and remainder theorems
Logarithmic and Exponential Functions
Trigonometrical identities, secant, cosecant and cotangent functions
First order differential equations
Integration using trigonometrical relationships and the trapezium rule
Numerical solution of equations

<b>Mechanics 1</b>
Forces and Equilibrium
Kinematics of motion in a straight line
Newton's Laws of Motion, Energy, Work and Power

<b>Probability and Statistics 1</b>
Representation of Data
Permutations and combinations
Probability
Discrete random variables
The normal distribution



## A LEVEL MATHEMATICS

Requires mastery of:

- Four units of which two (Pure Mathematics 1 and Mechanics 1, or Pure Mathematics 1 and Probability and Statistics 1) may have been taken during an earlier examination session (not more than 13 months prior) for an AS Mathematics qualification. Alternatively, candidates may take all four units for an A Level qualification during the same examination session.
- The compulsory topics included in Pure Mathematics 1 (see concept list in above AS Mathematics)
- Pure Mathematics 3
- Two optional units chosen from the following combinations: Mechanics 1 and Probability and Statistics 1, or Mechanics 1 and Mechanics 2, or Probability and Statistics 1 and Probability and Statistics 2.

The following compulsory topics and themes for each unit are:

Pure Mathematics 3 (includes everything from Pure Mathematics 2, plus those listed below)
Algebraic rational numbers and functions
Dividing polynomials by a linear or quadratic polynomial
Integration of rational functions by means of decomposition, integrands as products, use integration by parts to integrate
Vectors
Differential equations
Complex numbers

Mechanics 2
Motion of projectile
Equilibrium of a rigid body
Uniform motion in a circle
Hooke's Law
Linear motion under a variable force

Probability and Statistics 2
The Poisson distribution
Linear combinations of random variables
Continuous random variables
Sampling and estimation
Hypothesis tests

## A LEVEL FURTHER MATHEMATICS

Assumes knowledge of:

- Pure Mathematics 1 and 3
- Mechanics 1 and 2
- Probability and Statistics 1 and 2

A Level Further Mathematics examination assesses technique with application. The compulsory topics and themes are:

A Level Further Mathematics
Polynomials and rational functions
Polar coordinates
Summation of series
Mathematical induction
Differentiation and integration
Differentials equations
Complex numbers – de Moivre's theorem
Vectors
Matrices and linear spaces
Momentum and impulse
Circular motion
Equilibrium of a rigid body under coplanar forces
Rotation of a rigid body
Simple harmonic motion



Further work on distributions
Inference using normal t-distributions
Chi squared tests
Bivariate data

#### AS HIGHER MATHEMATICS

Requires study of:

- Compulsory topics included in Pure Mathematics 3 (see concept list for A Level above)
- One optional unit chosen from either Mechanics 2 or Statistics 2

Certification in AS Higher Mathematics via option Pure Mechanics 3 and Probability and Statistics 2 is only available to candidates who have already obtained, or are currently obtaining, certification in AS Mathematics via option Pure Mathematics 1 and Probability and Statistics 1.

#### AICE STATISTICS (AS HALF CREDIT)

Requires master of:

- Probability and Statistics 1



## Sciences

The following certifications are available:

- A Level Physics
- AS Physics
- A Level Biology
- AS Biology
- A Level Chemistry
- AS Chemistry

### AS AND A LEVEL PHYSICS

AS Physics assumes knowledge of

- physics equivalent to that obtained by gaining a grade C or better in IGCSE Physics;
- mathematics;

and requires mastery of

- compulsory topics;
- practical skills (assessment includes a laboratory test of the practical skills of manipulation, presentation, analysis and evaluation).

AS Physics compulsory topics	
General Physics	Physical quantities and units
	Measurement techniques
Newtonian Mechanics	Kinematics
	Dynamics
	Forces
	Work, energy, power
Matter	Phases of matter
	Deformation of solids
Oscillations and Waves	Waves
	Superposition
Electricity and Magnetism	Electric fields
	Current of electricity
	DC circuits
Modern Physics	Nuclear physics

A Level assumes knowledge of

- physics at AS Level;

and requires mastery of

- compulsory topics;
- practical skills (assessment includes a written test of the practical skills of planning, analysis and evaluation).

A Level Physics compulsory topics	
General Physics	Physical quantities and units
	Measurement techniques
Newtonian Mechanics	Kinematics
	Gravitational Field
Matter	Ideal gases
	Temperature
	Thermal properties of materials
Oscillations and Waves	Oscillations
Electricity and Magnetism	Electric fields
	Capacitance
	Magnetic Fields
	Electromagnetism
	Electromagnetic induction
	Alternating currents



Modern Physics	Charged particles
	Quantum Physics
	Nuclear physics
Applications of Physics: Gathering and Communicating Information	Direct Sensing
	Remote Sensing
	Communicating Information

## AS AND A LEVEL BIOLOGY

AS Biology assumes knowledge of

- biology equivalent to that obtained by gaining a grade C or better in IGCSE Biology;

and requires mastery of

- compulsory topics;
- practical skills (assessment includes a laboratory test of the practical skills of manipulation, presentation, analysis and evaluation).

AS Biology compulsory topics
Cell structure
Biological molecules
Enzymes
Cell Membranes and Transport
Cell and nuclear division
Genetic control
Transport
Gas exchange
Exercise
Drugs
Infectious disease
Immunity
Ecology

A Level assumes knowledge of

- biology at AS Level;

and requires mastery of

- compulsory topics;
- practical skills (assessment includes a written test of the practical skills of planning, analysis and evaluation).

A Level Biology compulsory topics
Energy and Respiration
Photosynthesis
Regulation and control
Inherited change
Selection and Evolution
Applications of Biology: Biodiversity and Conservation
Applications of Biology: Gene Technology
Applications of Biology: Biotechnology
Applications of Biology: Crop Plants
Applications of Biology: Aspects of Human Reproduction



## AS AND A LEVEL CHEMISTRY

AS Chemistry assumes knowledge of:

- chemistry equivalent to that obtained by gaining a grade C or better in IGCSE Chemistry,

and requires mastery of

- compulsory topics;
- practical skills (assessment includes a laboratory test of the practical skills of manipulation, presentation, analysis and evaluation).

AS Chemistry compulsory topics	
Physical chemistry	Atoms, molecules and stoichiometry
	Atomic structure
	Chemical bonding
	States of matter
	Chemical energetics
	Electrochemistry
	Equilibria
	Reaction kinetics
Inorganic chemistry	The Periodic Table: chemical periodicity
	Group II
	Group VII
	Nitrogen and sulphur
Organic chemistry	Introductory topics
	Hydrocarbons
	Halogen derivatives
	Hydroxy compounds
	Carbonyl compounds
	Carboxylic acids and derivatives
	Polymerisation

A Level Chemistry assumes knowledge of

- chemistry at AS Level;

and requires mastery of

- compulsory topics;
- practical skills (assessment includes a written test of the practical skills of planning, analysis and evaluation).

A Level Chemistry compulsory topics (in addition to further study of most AS topics)	
Inorganic chemistry	Group IV
	Chemistry of the transition elements
Organic chemistry	Nitrogen compounds
Applications of chemistry	Chemistry of life
	Applications of analytical chemistry
	Materials and design



## Modern Foreign Languages

### A AND AS LEVEL MODERN FOREIGN LANGUAGES

The examination assesses the skills of speaking, listening, reading and writing, the student's linguistic competence and their knowledge of contemporary society by requiring them to:

- Understand and respond to texts written in the target language
- Draw from a variety of sources such as magazines, newspapers, reports, books and other forms of extended writing
- Manipulate the target language accurately in spoken and written forms to demonstrate a capacity to choose appropriate examples of lexis and structures
- Select information and present it in the target languages to organise arguments and ideas logically.

Both the AS and A Level examinations include a speaking component, writing component and essay. All directions and questions will be asked in the target language.

#### Speaking component

Requires the candidate to give a presentation of about three minutes on a specific topic. The presentation will lead to a seven or eight minute conversation with the examiner about the chosen topic. During the topic conversation, the candidate will be required to seek information and the opinions of the examiner. This will be followed by another eight to nine minute general conversation about the candidate's background and interests and move into a more mature conversation discussing more abstract and/or current issues within the general topic area, selected from a pre-set list of 27 topics. The general conversation section might only cover two or three topic areas. It is intended that both conversation elements will be lively and spontaneous.

#### Reading and writing component

Includes two passages in the foreign language, together not to exceed 750 words, which deal with related themes. Candidates will be expected to answer specific and general comprehension questions, and to respond to a task requiring summary/comparison of issues raised in both passages. The foreign language will be used for all questions and answers.

#### Essay component

Features a question on each of six set topics from which the candidate will choose one and write an essay in the foreign language of between 250 and 400 words.

#### Text component (A Level only)

Requires candidates to answer three questions in the target language on three different texts, from a choice of eight. Candidates are expected to write between 500 and 600 words for each of their answers.



## English

The following certifications are available:

- AS Literature in English
- A Level Literature in English
- AS English Language

### AS ENGLISH LANGUAGE

The examination assesses the interdependent skills of reading, analysis and communication. Candidates for English Language will be required to demonstrate their:

- Ability to read with understanding written materials in a variety of forms, and to comment on its effectiveness
- Knowledge and understanding of features of English language
- Ability to write clearly, accurately and effectively for a particular purpose or audience.

The examination consists of two papers.

#### Passages for Comment paper

Candidates will answer two questions from a choice of three based on a passage, or passages, of text printed in the question paper. They will include informative and narrative writing in a wide variety of styles. Each question will involve a commentary on use of language in the passage(s). The successful candidate will be able to identify distinguishing features of passages, and to relate them to the function and context of the writing, and to organise information in their answers. They will make comments on aspects such as vocabulary, figurative language, word-ordering and sentence structure, formality/informality of tone, and the communication of attitudes, bias or prejudice. In the directed writing tasks they will demonstrate the ability to write for a specific purpose and/or audience using appropriate vocabulary, tone and style.

#### Composition paper

Divided into two sections:

- Section A: narrative/descriptive/imaginative writing
- Section B: discursive/argumentative writing.

Candidates will write one composition from each section using between 600 and 900 words for each. In section A, successful candidates will demonstrate the ability to write an imaginative piece, using language to create deliberate effects such as creating a mood or creating a character. In section B, candidates should demonstrate the ability to construct an argument, present a view, or views, clearly, coherently and persuasively.

### AS AND A LEVEL LITERATURE IN ENGLISH

Both the AS and A Level examinations will require candidates to:

- Respond to text in the three main forms (prose, poetry and drama) of different types and from different cultures
- Understand the ways in which writers' choice of form, structure and language shape meanings
- Produce informed, independent opinions and judgements on literary texts.

The A Level examination will also require candidates to appreciate and discuss varying opinions of literary works.

The AS examination consists of two papers.

#### Poetry and Prose paper

Requires candidates to answer on two texts, from a choice of six set texts, one question from each section. Section A is poetry and section B is prose.

All questions require candidates to demonstrate a response to showing understanding of the text and an informed independent opinion, and to communicate these clearly and appropriately. Questions on the relation of textual parts to their wholes, on the effective use of narrative methods, and on the style and language of texts will test candidates' understanding of the ways in which writers' choice of form, structure and language shape meanings.



#### Drama paper

Requires candidates to answer two questions on two plays from a choice of six set plays. On each text an essay question and a passage-based question will be set.

All questions require candidates to demonstrate a response to showing understanding of the text and an informed independent opinion, and to communicate these clearly and appropriately. Questions on the relation of textual parts to their wholes, on the effective use of narrative methods, and on the style and language of texts will test candidates' understanding of the ways in which writers' choice of form, structure and language shape meanings.

The A Level examination includes the two AS papers mentioned above, plus

- Shakespeare and other pre-20<sup>th</sup> century texts paper
- And one additional paper selected from the following: 20<sup>th</sup> Century Texts, Comment and Appreciation, Coursework

A Level candidates' work should be informed by some understanding of the ways in which other readers have interpreted the texts.

#### 20<sup>th</sup> Century Texts paper

Requires candidates to answer both one essay and one passage-based question from two different texts selected from a list of eight set texts.

#### Comment and Appreciation paper

Allows candidates a choice of two from three questions. They must write a critical appreciation of previously unseen passages that will cover at least two of the categories: prose, poetry and drama. One of the questions may involve a comparison of passages. At least one passage will be from a 20<sup>th</sup> century work. The questions will test candidates' ability to read literature critically and demonstrate, by informed discussion and opinion, an understanding of the ways in which meaning is expressed through a writer's choices of form, structure and language. The passages will be attributed to authors by name with either dates of the author or the date of the passage.

#### Coursework

Coursework is a school-based assessment by CIE trained teachers. The work will be internally marked (graded) and externally moderated. Candidates submit a folder of two essays on two texts, which must not be texts set for study elsewhere in the syllabus, and must be whole works, originally written in English. These two texts must be from two different forms (prose/poetry/drama). A minimum of 2000 and a maximum of 3000 words should be submitted in total.



## History

### AS AND A LEVEL HISTORY

The AICE History examination assesses the following two objectives: criticism and exposition. Students are required to construct explanations of historical phenomena, developments and events which:

- Demonstrate an understanding of cause and consequence, change and continuity, similarity and difference
- Show the ability to understand the intentions, motives and beliefs of people in the past
- Relate present events to their historical routes.

Analysis – students are required to interpret and evaluate historical source materials as evidence.

The AS syllabus requires candidates to study one area of history from the list below. It includes source-based studies through which candidates will develop their skills of interpreting and evaluating evidence.

The A Level syllabus requires candidates to study for two different areas and periods of history from the list below, thus encouraging them to identify patterns in, and connections between, apparently contrasting events and developments. It also includes source-based studies through which candidates will develop their skills of interpreting and evaluating evidence. The examination emphasises the use of essays and other types of answer in continuous prose.

Areas of history which candidates may choose from:	
Modern European History	1789 – 1939
Southeast Asia: From Colonies to Nations	1870 – 1980
International History	1945 – 1991
The History of Tropical Africa	1855 – 1914
The History of the USA	1840 – 1968
Caribbean History	1794 – 1900



## Contact Details for Further Information

For further details about CIE pre-university qualifications, please visit our website at [www.cie.org.uk](http://www.cie.org.uk), or contact:

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