



M|P|W

# GCSE Course Outlines

## Birmingham

2025/2026



[www.mpw.ac.uk](http://www.mpw.ac.uk)



## Welcome

*Our mission is to develop the confidence, maturity, knowledge and skills of our students, turning your academic aspirations into reality.*

Studying at GCSE is an exciting opportunity which allows you to explore a variety of subjects and gain qualifications that will enable you to progress to the next stage of your academic journey.

At MPW we aim to provide you with more support than you might expect to receive at another school whilst ensuring that you grow in confidence and develop your skills. To do well you will need to commit to your studies and take full advantage of our small class sizes and regular Timed Assignments, the latter of which will help engender improved examination technique as well as in depth subject knowledge. As you might expect, we have really high expectations of our students and so issues such as attitude to learning, general behaviour, attendance and time keeping are things to which we attach a high importance. If you have the right attitude and are willing to work hard, then without question, studying GCSE's at MPW will help you to be the success that you want to be.

Our team here will help with any decisions you have to make regarding GCSE subjects and our expertise in supporting students develop means that we will also help with your career planning.

An integral feature regarding our approach to education is the use of Timed Assignments. These regular assessments under timed conditions enable students to develop superior subject knowledge and apply their understanding under timed conditions, improving their examination technique in the process. The linear nature of GCSE courses means that our Timed Assignments are essential to keeping students energised by examination practice.

Our aim is to help turn the academic aspirations of our students into reality. We hope that you enjoy using this guide and look forward to welcoming you into MPW in September.

**Mark Shingleton**

*Principal*

# CONTENTS

2	Letter from the Principal
6	Art
8	Biology
10	Business Studies
12	Chemistry
14	Computer Science

16	English Language
18	English Literature
20	French
22	German
24	History
26	Mathematics

28	Physics
30	Religious Studies
32	Spanish



# GCSE ART

## What is GCSE Art?

GCSE Art and Design at MPW offers students the chance to explore their own thoughts and ideas in a visual format. The course encourages students to experiment with a variety of techniques and materials, which they will build on through steady development. Students are also taught about historic art movements and the work of contemporary artists through visiting art galleries around Britain whilst building upon their previous artistic skills and preparing for their externally set exam.

## The Specification

AQA Art and Design 8201

## Assessment

8201C Portfolio of Work

Art, Craft and Design coursework | 60%

8201X Externally Set Task

10 hours controlled assessment | 40%

## Course content

### 8201C Portfolio of Work

Candidates must present a selection of thoughtfully presented work that demonstrates the breadth and depth of the course of study. More than one extended collection of work, or project must be presented which demonstrate an ability to sustain work from initial starting points or project briefs to the realisation of intentions and include evidence of research, the development of ideas and meaningful outcomes relating to Art, Craft and Design.

### 8201X Externally Set Task

Starting from a brief set by AQA, candidates are expected to develop their own work informed by their preparatory studies. There is unlimited preparation time followed by a ten hour period of sustained focused study in which candidates are expected to develop their own unaided work informed by their preparatory studies.

## Reading

### The Story of Art

*By E H Gombrich*

Published by Phaidon

### The Art Book

*By Adam Butler*

Published by Phaidon

The Story of Art is a comprehensive survey of the entire history of western art from cave paintings to the present and is, in effect, the GCSE course text and reference for all GCSE examination boards. The other three books are excellent sources for visual references, with short and concise explanations about the work of a vast number of historic and contemporary artists.

### The 20th Century Art Book

*By Rachel Barnes*

Published by Phaidon

### The Photography Book

*By Ian Jeffery*

Published by Phaidon



# GCSE BIOLOGY

## What is GCSE Biology?

Biology is the study of the structure and function of living organisms, along with the study of the interactions of organisms with the environment.

## The Specification

AQA GCSE Biology 8461 (Separate science award of a single GCSE in Biology). The scheme of assessment consists of two tiers: Foundation Tier and Higher Tier. Foundation Tier assesses grades 1-4 (equivalent to grades G to C). Higher Tier assesses grades D to A\* (equivalent to grades C to A\*).

## Subject content

1. Cell biology
2. Organisation
3. Infection and response
4. Bioenergetics
5. Homeostasis and response
6. Inheritance, variation and evolution
7. Ecology

## Assessment:

All examinations are written and to be taken at the end of year 11. There are two exam papers in total.

## Examination Paper 1: What's assessed?

Topics 1–4: Cell biology, Organisation, Infection and response and Bioenergetics.

## How it's assessed?

Written exam: 1 hour 45 minutes (Totalling a 100 marks), comprising 50% of the total GCSE marks. Questions may be either multiple choice, structured, closed short answer and open response.

## Examination Paper 2: What's assessed?

Topics 5–7: Homeostasis and response, Inheritance, variation and evolution and Ecology.

Written exam: 1 hour 45 minutes (Totalling a 100 marks), comprising 50% of the total GCSE marks. Questions may be either multiple choice, structured, closed short answer and open response.

## Practical laboratory studies

Throughout the two-year GCSE course, students are required to complete 10 practical experiments. At least 15% of the overall written examination of GCSE Biology will assess knowledge, skills and understanding in relation to practical work.



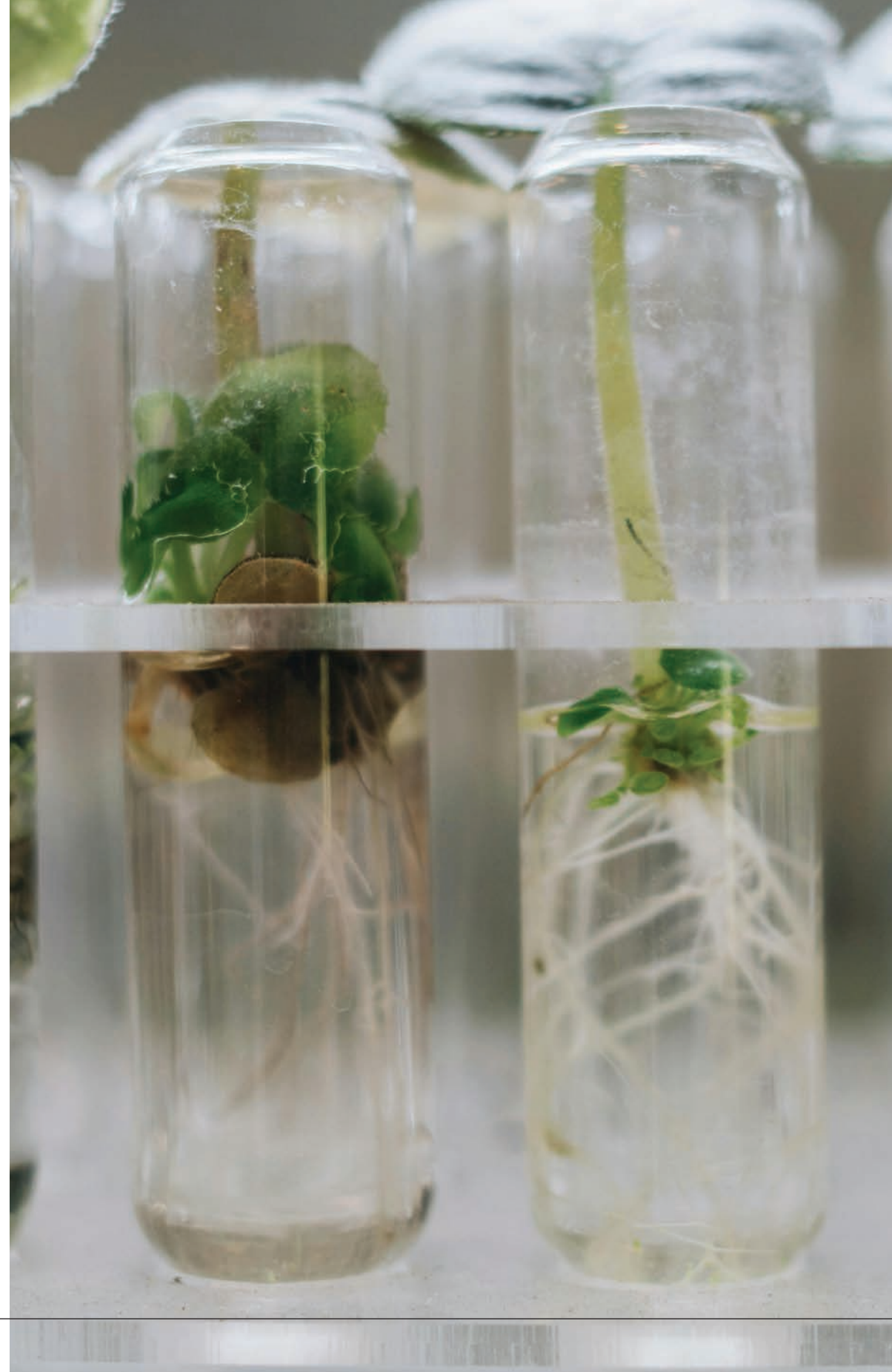
## Reading

### AQA GCSE Biology Student Book (Third Edition) Paperback

By Ann Fullick, (Lawrie Ryan, Series Editor)  
Publisher OUP Oxford (26 May 2016)

### AQA GCSE (9-1) Biology: Student Book

By Anne Pilling, John Beeby, Ed Walsh  
Publisher Collins (20 May 2016)



# GCSE BUSINESS STUDIES

## What is GCSE Business Studies? (OCR)

Business Studies at GCSE offers a comprehensive introduction to all the main areas of modern business practice, enabling students to gain an understanding of the business world through real-life case studies as well as of the theoretical principles that lie behind it.

## The Specification

The aims of this specification are to:

- encourage candidates to be inspired, moved and changed by studying a broad, coherent, satisfying and worthwhile course of study
- allow candidates to gain an insight into related sectors such as economics and accounting
- prepare candidates to make informed decisions about further learning opportunities and career choices
- appreciate the range of perspectives of different stakeholders in relation to business and economic activities.

## Assessment

Business 1

Unseen exam | 50%

Business 2

Unseen exam | 50%

## Course content

The aim of the course is to develop an understanding of the internal and external environment in which business activity takes place, the nature and objectives of the groups involved and the relevant organisations. Students should develop knowledge and understanding of the language, concepts and techniques of business.

The subject encourages clear thinking and expression. Students will need to be able to write confidently in English and to commit a wide range of technical vocabulary to memory.

GCSE Business Studies is an excellent preparation for the study of the subject at A level (or the related subjects of Economics, Accounts and ICT) and introduces many of the syllabus areas and techniques involved.

## Reading

**OCR GCSE (9-1) Business Student Book**

*By Mike Schofield and Alan Williams*

Published by Hodder Education



# GCSE CHEMISTRY

## What is GCSE Chemistry?

Chemistry is the study of the elements that are the building blocks of all matter. Chemists explain how those elements combine to produce compounds and how the properties of substances are used for the benefit of mankind. Chemistry is a relevant and developing science making an essential contribution to industry and society. Chemistry is a valuable subject for those wishing to enter a science related profession including medicine, pharmacy, dentistry and optometry.

## The Specification

AQA Chemistry 8462 - The scheme of assessment consists of two tiers: Foundation Tier and Higher

Tier. Foundation Tier assesses grades 1 to 5 and Higher Tier assesses grades 4 to 9.

## Assessment

### CH1HP Chemistry 1

1 hour 45 minutes exam | 50%

### CH2HP Chemistry 2

1 hour 45 minutes exam | 50%

## Course content

### CH1HP Chemistry 1

- C1 Atomic structure and the periodic table
- C2 Bonding, structure, and the properties of matter
- C3 Quantitative chemistry
- C4 Chemical changes
- C5 Energy changes

### CH2HP Chemistry 2

- C6 The rate and extent of chemical changes
- C7 Organic chemistry
- C8 Chemical analysis
- C9 Chemistry of the atmosphere
- C10 Using resources



## Reading

### AQA GCSE Chemistry Third Edition

By Lawrie Ryan and Ray Peacock  
Published by Oxford Publishing



# GCSE COMPUTER SCIENCE

## What is GCSE Computer Science?

Our 21st century world is an ever-changing place where we can now stream high definition movies to our smartphones, video chat with family and friends on the other side of the world and store huge amounts of music or photos in the cloud! We can design cars using a laptop, use voice control to navigate or travel and even do our banking online at home in bed. All of these advances are made possible because of the work of computer scientists. Computer Science is the course that will help you develop the fundamental skills and understanding required to make sense of our digital age, write your own programs and perhaps set you on course for technology that is yet to happen!

## The Specification

OCR GCSE Computer Science (9-1) J276

## Assessment

J276/01 Computer Systems

1 hour 30 mins exam | 50%

J276/02 Computational thinking,

1 hour 30 mins exam | 50%

Algorithms, and programming

## Course content

### J276/01 Computer Systems

Introduces students to the central processing unit (CPU), computer memory and storage, wired and wireless networks, network topologies, system security and system software. It also looks at ethical, legal, cultural and environmental concerns associated with computer science.

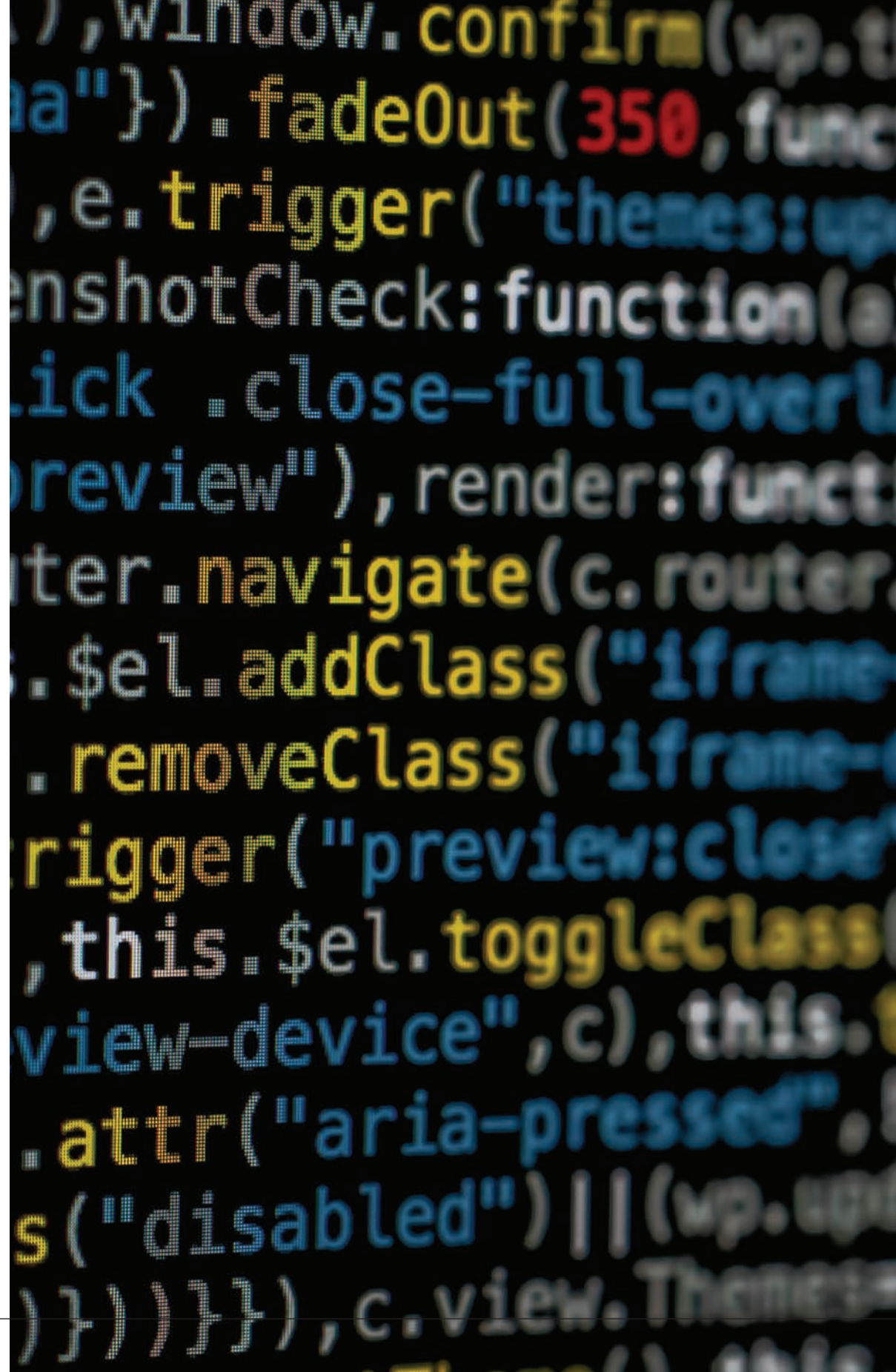
### J276/02 Computational thinking, algorithms, and programming

Students apply knowledge and understanding gained in component J276/ 01. They develop skills and understanding in computational thinking: algorithms, programming techniques, producing robust programs, computational logic, translators and data representation. The skills and knowledge developed within this component will support the learner when completing the Programming Project.

### Programming Project

Students use the Programming Project tasks to develop their practical ability in the skills developed in components J276/01 and J276/02. They will have the opportunity to create suitable algorithms to achieve their self-defined success criteria. Students then code their solutions in a programming language called Python which they will document, test and evaluate.

Students have 20 hours timetabled time to complete their Programming Project. The Programming Project does not count towards their final grade, but is a requirement of the course.



# IGCSE ENGLISH LANGUAGE?

## What is IGCSE English Language?

The study of English not only provides skill in understanding and communicating effectively but in itself makes accessible a world of ideas and viewpoints from every culture. It underpins the ability of students to express themselves in other subjects, and it balances the disciplines of a range of studies.

The Edexcel International General Certificate of Secondary Education (International GCSE) in English Language (Specification A) is part of a suite of International GCSE qualifications offered by Edexcel.

The Edexcel International GCSE in English Language (Specification A) is designed as a two year course. The specification includes a wide range of reading and writing, and the possibility of both written and oral coursework. The reading requirements of the course are covered in the Pearson Edexcel International GCSE in English Language, for use throughout the course and in the examination.

## The Specification

GCSE in English Language (Specification A) (4EA1)

## Assessment

The Edexcel International GCSE in English Language (Specification A) has the option of two assessment routes.

### Route one - 100% written examination paper

4EA1/01 Paper 1	4EA1/02 Paper 2
Externally assessed written paper	Externally assessed written paper
2 hrs 15 mins   60%	1 hr 30 mins   40%

### Route two - 70% written examination paper and 30% internally assessed coursework

4EA1/01 Paper 1	4EA0/03 Paper 3
Externally assessed written paper	Internally assessed coursework   40%
2 hrs 15 mins   60%	

## Course content

### 4EA1/01 Paper 1: Non-fiction Texts and Transactional Writing

- Section A: Reading – a mixture of short and long answer questions related to a non-fiction text from Part 1 of the *Pearson Edexcel International GCSE English Anthology* and one previously unseen extract.

### Section A of the Pearson Edexcel International GCSE English Anthology.

- Section B: Transactional Writing – one 45 mark writing task, from a choice of two involving a given audience, form or purpose.

### 4EA1/02 Paper 2: Poetry and Prose Texts and Imaginative Writing

- Section A: Reading – one 30 mark essay question on a poetry or prose text from Part 2 of the *Pearson Edexcel International GCSE English Anthology*.
- Section B: Imaginative Writing – one 30 mark imaginative writing task from a choice of three.

### 4EA1/03 Paper 3: Poetry and Prose Texts and Imaginative Writing

- Assignment A – Poetry and prose texts – one 30 mark essay question based on any two poetry or prose texts from Part 2 of the Pearson Edexcel International GCSE English Anthology, including a 6 mark commentary on why these texts were selected.
- Assignment B: Imaginative writing – one 30 mark imaginative writing task.

### Spoke Language endorsement

- To demonstrate presentation skills in a formal setting, listen and respond to questions and feedback, and use spoken English effectively.



## Reading

Pearson Edexcel International GCSE English

# IGCSE ENGLISH LITERATURE

## What is IGCSE English Literature?

This course enables the students to become acquainted with some of the major works of Literature from past and present time in the principal genres of drama, poetry and prose. The Edexcel International GCSE in English Literature is designed as a two-year course. A selection of prose, drama and poetry from around the world allows teachers a wide choice of set texts. It provides two routes of assessment — either a 100 per cent examination option or an examination and coursework route. The examination questions allow all students to make a personal, informed response to the texts studied. The qualification offers an enjoyable and stimulating introduction to the study of English Literature.

## The Specification

Edexcel 4ET1 IGCSE English Literature

## Assessment

**60% written examination paper and**

**40% internally assessed coursework**

**(Paper 1 and Paper 3).**

### 4ET1/01 Paper 1

Poetry and Modern Prose

1 hour 45 mins | 60%

### 4ET1/03 Paper 3

Modern Drama and Literary Heritage | 40%

## Course content

### Paper 1 Drama options include:

Arthur Miller: *A View from The Bridge*

J B Priestley: *An Inspector Calls*

Simon Stephens: *The Curious Incident of the Dog in the Night-time*

Diane Samuels: *Kindertransport*

Wole Soyinka: *Death and the King's Horseman*

### Paper 1 An unseen poem.

Poems taken from Section C of the *Pearson Edexcel International GCSE in English Literature*, including:

*If* - Rudyard Kipling

*Sonnet 116* ('Let me not to the marriage ...') -

Shakespeare

*La Belle Dame Sans Merci* - John Keats

*Poem at Thirty-Nine* - Alice Walker War

*Photographer* - Carol Ann Duffy

*The Tyger* - William Blake

*My Last Duchess* - Robert Browning

*Half-caste* - John Agard

*Do Not Go Gentle into That Good Night* - Dylan Thomas

### Prose options include:

The Whale Rider: *Witi Ihimaera*

Harper Lee: *To Kill a Mocking Bird*

John Steinbeck: *Of Mice and Men*

Amy Tan: *The Joy Luck Club*

Chinua Achebe: *Things Fall Apart*

### Paper 2 and Paper 3 Drama options include:

Arthur Miller: *A View from The Bridge*

J B Priestley: *An Inspector Calls*

Simon Stephens: *The Curious Incident of the Dog in the Night-time*

Diane Samuels: *Kindertransport*

Wole Soyinka: *Death and the King's Horseman*

### Paper 2 and Paper 3 Literary Heritage options include:

William Shakespeare: *Romeo and Juliet*

William Shakespeare: *Macbeth*

William Shakespeare: *The Merchant of Venice*

Jane Austen: *Pride and Prejudice*

Charles Dickens: *Great Expectations*

Nathaniel Hawthorne: *The Scarlet Letter*

## Reading

To be advised from the selection of literature options above, plus the *Pearson Edexcel International GCSE in English Literature*.



# IGCSE FRENCH

## What is IGCSE French?

Knowledge of a second language is now generally recognised as an indispensable tool, whether for going on holiday or for work. French at GCSE level provides students with the essentials of communication, enabling you to describe events and situations and convey your thoughts and feelings to a basic level and develop knowledge and understanding of French grammar. The course covers three broad themes relating to France, Belgium, Switzerland and other Francophone nations/regions: 30

## The Specification

AQA French (8658H or 8658F) - Higher Tier (H), for grades 4 – 9; Foundation Tier (F) for grades 1 – 5.

## Assessment

### Paper 1 Listening

45 mins (H); 35 mins (F) exam | 25%

### Paper 2 Speaking

10-12 mins (H); 7-9 mins (F) | 25%

### Paper 3 Reading

1 hour (H); 45 mins (F) exam | 25%

### Paper 4 Writing

1 hr 15 mins (H); 1 hour (F) exam | 25%

## Course content

### Paper 1 Listening

- Section A - questions in English, to be answered in English or non-verbally
- Section B - questions in French, to be answered in French or non-verbally.

### Paper 2 Speaking

The format is the same at Foundation Tier and Higher Tier, but with different stimulus questions for the Photo card and different stimulus materials for the Role-play. The timings are different too:

- Role-play - 15 marks (2 minutes at Foundation Tier; 2 minutes at Higher Tier)
- Photo card - 15 marks (2 minutes at Foundation Tier; 3 minutes at Higher Tier)
- General conversation - 30 marks (3–5 minutes at Foundation Tier; 5–7 minutes at Higher Tier)

### Paper 3 Reading

The format is the same at Foundation Tier and Higher Tier, but with different levels of text.

- Section A - Questions in English, to be answered in English or non-verbally
- Section B - Questions in French, to be answered in French or non-verbally
- Section C - Translation from French into English - a minimum of 35 words (F) and 50 words (H)

### Paper 4 Writing

- Foundation: Short message, short passage and a structured writing task in French which presents facts and expresses ideas and opinions; Translation from English into French
- Higher: Structured writing task, plus an open-ended task where students must express and justify points of view in French where appropriate; Translation from English into French.



## Reading

### AQA French Higher

*By Various*

Published by Oxford Kerboodle,  
ISBN 9780198365839 Kerboodle resources online



# GCSE GERMAN

## What is GCSE German?

Knowledge of a second language is now generally recognised as an indispensable tool, whether for going on holiday or for work. German at GCSE level provides students with the essentials of communication, enabling you to describe events and situations and convey your thoughts and feelings to a basic level and develop knowledge and understanding of German grammar. The course covers three broad themes, relating issues to Germany, Austria and Switzerland:

1. Identity & Culture
2. Local, national, international and global areas of interest
3. Current and future study and employment

The four main language components of listening, reading, speaking and writing the course provides a sound foundation in language-learning.

## The Specification

AQA German (8668H or 8668F) Higher Tier (H), for grades 4 – 9; Foundation Tier (F) for grades 1 – 5.

## Assessment

### Paper 1 Listening

45 mins (H); 35 mins (F) exam | 25%

### Paper 2 Speaking

10-12 mins (H); 7-9 mins (F) | 25%

### Paper 3 Reading

1 hour (H); 45 mins (F) exam | 25%

### Paper 4 Writing

1 hour 15 mins (H); 1 hour (F) exam | 25%

## Course content

### Paper 1 Listening

- Section A – questions in English, to be answered in English or non-verbally
- Section B – questions in German, to be answered in German or non-verbally.

### Paper 2 Speaking

The format is the same at Foundation Tier and Higher Tier, but with different stimulus questions for the Photo card and different stimulus materials for the Role-play. The timings are different too:

- Role-play – 15 marks (2 minutes at Foundation Tier; 2 minutes at Higher Tier)
- Photo card – 15 marks (2 minutes at Foundation Tier; 3 minutes at Higher Tier)
- General conversation – 30 marks (3–5 minutes at Foundation Tier; 5–7 minutes at Higher Tier)

### Paper 3 Reading

The format is the same at Foundation Tier and Higher Tier, but with different levels of text.

Section A – Questions in English, to be answered in English or non-verbally

Section B – Questions in German, to be answered in German or non-verbally

Section C – Translation from German into English - a minimum of 35 words (F) and 50 words (H)

### Paper 4 Writing

- Foundation: Short message, short passage and a structured writing task in German which presents facts and expresses ideas and opinions; Translation from English into German

- Higher: Structured writing task, plus an open-ended task where students must express and justify points of view in German where appropriate; Translation from English into German.



## Reading

### AQA German Higher

By Various

Published by Oxford Kerboodle, ISBN 9780198365877 Kerboodle resources online



# GCSE HISTORY

## What is GCSE History?

History GCSE introduces students to a wide range of people and events crucial to the contemporary world and develops skills such as empathy and the ability to argue effectively.

## Specification

AQA History (8145)

## Exams

**Paper 1: Understanding the modern world:**

1 hour 45 minutes | 84 marks

**Paper 2: Shaping the nation:**

1 hour 45 minutes | 84 marks

## Content

### Germany, 1890-1945

**Democracy and dictatorship** This period study focuses on the development of Germany during a turbulent half century of change. It was a period of democracy and dictatorship – the development and collapse of democracy and the rise and fall of Nazism. Students will study the political, economic, social and cultural aspects of these two developments and the role ideas played in influencing change. They will also look at the role of key individuals and groups in shaping change and the impact the developments had on them.

### Conflict and tension: the First World War, 1894-1918

This wider world depth study enables students to understand the complex and diverse interests of the Great Powers and other states. It focuses on the causes, nature and conclusion of the First

World War and seeks to show how and why conflict occurred, and why it proved difficult to bring the war to a conclusion. This study also considers the role of key individuals and groups in shaping change and how they were affected by and influenced international relations.

### Britain: Health and the people: c1000 to the present day

This option focuses on the following questions: Why has there been progress in the health of the British people?; How and why has the pace and scale of medical development varied at different times?; What impact has medical progress had on people and society?; How and why have different factors been more important than others for individual medical developments?; What is the significance of key individuals or events in the history of medical development?

### Elizabethan England, c1568-1603

This option allows students to study in depth a specified period, the last 35 years of Elizabeth I's reign. The study will focus on major events of Elizabeth I's reign considered from economic, religious, political, social and cultural standpoints, and arising contemporary and historical controversies.



## Reading

**Oxford AQA GCSE History:**  
**Conflict and Tension First World War**  
**1894 - 1918 Student Book**

**Paperback AQA GCSE History:**  
**Health and the People**

**AQA GCSE History:**  
**Elizabethan England, c1568 - 1603**

**AQA GCSE History:**  
**Germany 1890-1945 Revision Guide (9 - 1)**



# GCSE MATHEMATICS

## What is GCSE Mathematics?

Mathematics is the formulation and application of numerical and abstract concepts. Students build on basic numeracy skills to learn more advanced mathematical procedures and how to apply them. They develop a feel for numbers, learn to carry out calculations and understand the significance of the results obtained. Mathematics is a vital tool in professions such as Accountancy, Architecture, Engineering, Economics, Medicine, Music and Finance as well as being one of the key qualifications for access to Further and Higher Education. Employers hold this qualification in high esteem.

## Specification

EDEXCEL Mathematics 1MA1 - The scheme of assessment consists of two tiers: Foundation and Higher. Foundation Tier assesses grades 1 to 5 and Higher Tier assesses grades 4 - 9 (3 allowed). There are three equally weighted written examination papers at Foundation or Higher Tier.

## Assessment

**1 MA1 | non calculator paper | 90 mins 33.3%**

**1 MA1/2 | calculator paper | 90 mins 33.3%**

**1 MA1/2 | calculator paper | 90 mins 33.3%**

The course varies in breadth and complexity according to the tier and covers:

## Number

Four operations, decimals, fractions, indices, highest common factor, lowest common multiple, standard form, ratio, percentages, compound measures, estimation, rounding, upper and lower bounds, recurring decimals to fractions, listing strategies.

## Algebra

Using formulae, surds, expanding and factorising, solving quadratics by factorising and formula, indices, changing subject, inverse and composite functions, proof,  $y = mx + c$ , equation of line

through two points or one point given gradient, parallel and perpendicular lines, cubic, quadratic, reciprocal, power and trig graphs, completing square, linear equations, simultaneous equations, linear inequalities, regions, iteration, squares, cubes, triangular numbers, linear and quadratic sequences,

## Ratio, proportion and rates of change

Compound units (density, pressure), ratio, percentages, percentage change, reverse percentages, direct and inverse proportion, linear area and volume ratio, gradients of tangents as rates of change / acceleration, area as distance in speed time graphs, exponential growth and decay.

## Geometry and measures

Angles, polygons, constructions, properties of quadrilaterals, congruency, similarity, Pythagoras' Theorem, rotations, reflections, translations, enlargements, circle theorems, plans, elevations, bearings, areas of plane shapes, circles, surface area and volume of prisms spheres cones cylinders, sectors, trigonometry, sine and cosine rule, vectors.

## Probability

Listings, relative frequencies, Venn diagrams, contingency tables, tree diagrams, conditional probability, sample spaces.

## Statistics

Random and stratified sampling, frequency polygons, pie charts, histograms, cumulative frequency, mean of frequency distributions, quartiles, box plots, correlation.

**181.** *To find the relations between the mean, the true, and the eccentric anomalies.*

Let  $m$ ,  $v$ , and  $u$  be the three angles.

Since the mean angular velocity in the ellipse is  $2\pi$  divided by the periodic time, or  $\frac{\mu^{\frac{1}{2}}}{AC^{\frac{3}{2}}}$ ,

$$m = u - e \sin u, \text{ Art. 179,}$$

and if  $a$ ,  $e$  be the semi major axis and eccentricity

$$SP \cos v = a \cos u - ae;$$

$$\therefore \cos u = \frac{(1 - e^2) \cos v}{1 + e \cos v} + e = \frac{e + \cos v}{1 + e \cos v};$$

$$\therefore \frac{1 - \cos u}{1 + \cos u} = \frac{1 - e}{1 + e} \frac{1 - \cos v}{1 + \cos v};$$

$$\therefore \tan \frac{u}{2} = \sqrt{\frac{1 - e}{1 + e}} \tan \frac{v}{2}.$$

$$\begin{aligned} \text{Also } SP &= AC + e \cdot CM \\ &= a(1 - e \cos u). \end{aligned}$$

**182.** *To find the time of describing any angle from the vertex, in a parabolic orbit.*

Let  $P$  be any point in a parabolic orbit whose axis is  $ASM$ ,  $S$  being the center of force; draw  $PM$  an ordinate to  $ASM$ . Then  $\sqrt{2\mu \cdot AS}$  is twice the area described in an unit of time.

$$\text{Therefore time in } AP = \frac{2 \text{ area } ASP}{(2\mu \cdot AS)^{\frac{1}{2}}}$$

$$\frac{1}{(2\mu \cdot AS)^{\frac{1}{2}}} \left( \frac{4}{3} AM \cdot MP - SM \cdot MP \right).$$

$$\text{Let } \angle ASP = \theta \text{ and } AS = a;$$

$$\therefore SP \cos^2 \frac{\theta}{2} = SY \cos \frac{\theta}{2} = AS;$$

$$\therefore AM = SP - AS = a \tan^2 \frac{\theta}{2},$$

$$PM = 2(a \cdot AM)^{\frac{1}{2}} = 2a \tan \frac{\theta}{2};$$

# GCSE PHYSICS

## What is GCSE Physics?

Physics is the study of everyday things and how they work. The subject covers a very wide range of material and attempts to show the relationships which govern natural phenomena and the connections between them. Physics also provides a foundation for those who wish to study science at A level.

## The Specification

AQA Physics 8463 - The scheme of assessment consists of two tiers:

- Foundation Tier
- Higher Tier

Foundation Tier assesses grades 1 to 5 and Higher tier assesses grades 4 to 9.

## Assessment

8463/1(F/H) | 1 hour 45 minutes | 50%

8463/2(F/H) | 1 hour 45 minutes | 50%

There are 10 required experiments that students must complete during the course, knowledge of the experiment, and techniques used, will be assessed within the two exam papers.

## Course content – Paper 1

### Topic 1 - Energy

- P1.1 Energy changes and stores
- P1.2 Conservation and dissipation of energy
- P1.3 National and global energy resources

### Topic 2 - Electricity

- P2.1 Current, potential difference and resistance
- P2.2 Series and parallel circuits
- P2.3 Domestic uses and safety
- P2.4 Energy transfers
- P2.5 Static electricity (separate sciences only)

### Topic 3 - Particle Model of matter

- P3.1 Changes of state and the particle model
- P3.2 Internal energy and energy transfers
- P3.3 Particle model and pressure

### Topic 4 - Atomic structure

- P4.1 Atoms and isotopes
- P4.2 Atoms and nuclear radiation
- P4.3 Hazards and uses of radioactive emissions and of background radiation (separate sciences only)
- P4.4 Nuclear fission and fusion (separate sciences only)

## Course content – Paper 2

### Topic 5 - Forces

- P5.1 Forces and their interactions
- P5.2 Work done and energy transfer
- P5.3 Moments, levers and gears (separate sciences only)
- P5.4 Energy transfers
- P5.5 Static electricity (separate sciences only)

### Topic 6 - Waves

- P6.1 Waves in air, fluids and solids
- P6.2 Electromagnetic waves
- P6.3 Black body radiation (separate sciences only)

### Topic 7 - Magnetism and Electromagnetism

- P7.1 Magnetic forces and fields
- P7.2 The motor effect
- P7.3 Induced potential and transformers (separate sciences only)

### Topic 8 - Space Physics (separate sciences only)

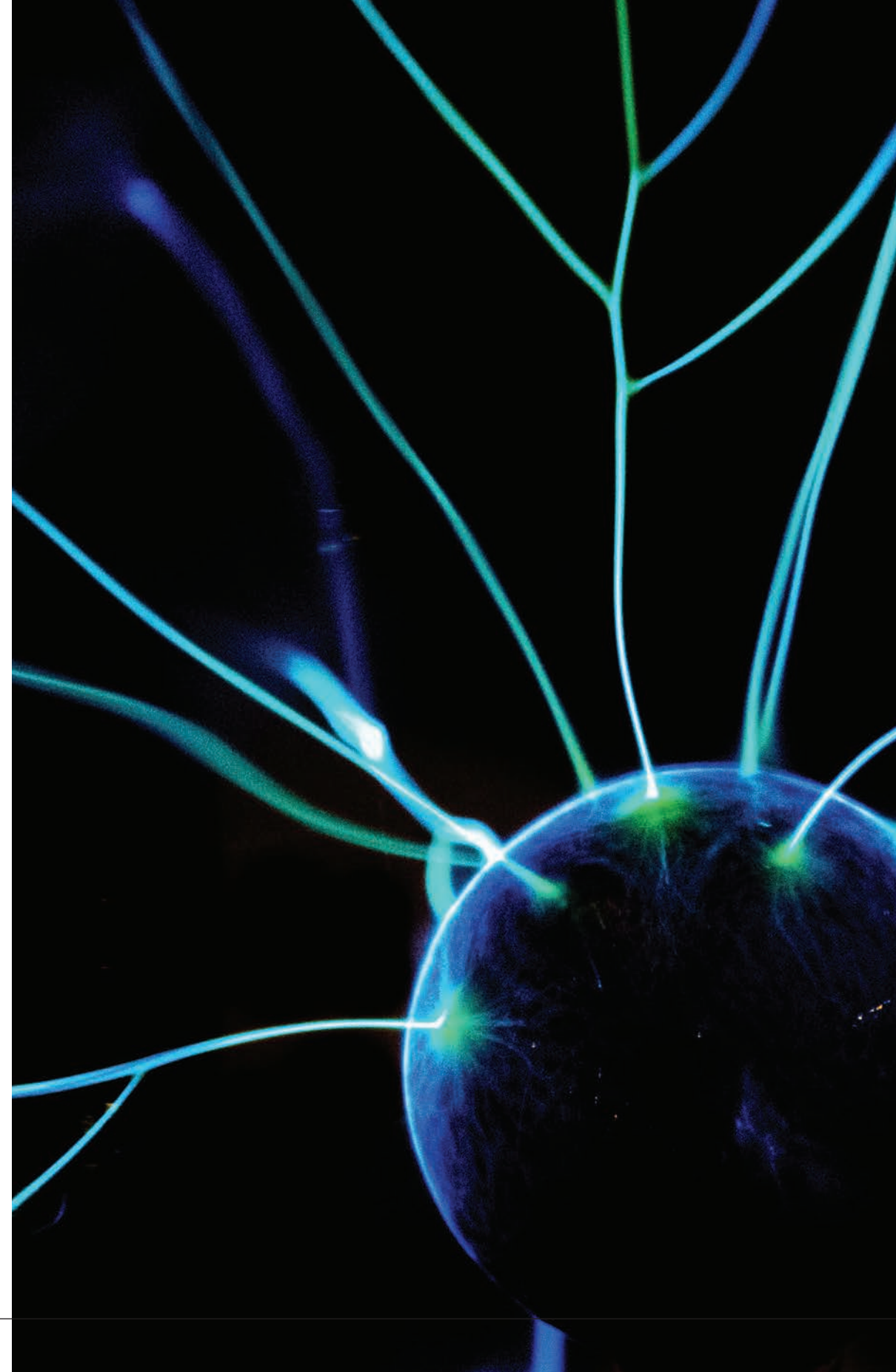
- P8.1 Stellar lifecycle (separate sciences only)
- P8.2 Orbital motions; satellites (separate sciences only)
- P8.3 Red-shift (separate sciences only)



## Reading

**AQA GCSE Physics 9-1 Student Book**

Author Mitchell et. al.  
Published by Collins



# GCSE RELIGIOUS STUDIES

## What is GCSE Religious Studies?

Religion is an important and vital aspect of modern life in the UK, which influences life in both the private and public spheres. GCSE Religious Studies explores tough questions and encourages students to learn about, and form opinions on interesting and complex issues that face the UK today. It will be a good foundation for any student and their plans for A Levels, by developing analytical skills that are helpful both in the arts and sciences. The course is designed to be delivered as a full course and students are assessed at the end of the course in two exams.

## The Specification

AQA GCSE (9-1) Religious Studies Specification A

## Course content

Beliefs, teachings and practices of **two** from:

**Buddhism**

**Christianity**

Catholic

Christianity

Hinduism

Islam

Judaism

Sikhism.

Christianity and Catholic Christianity is a prohibited combination.

## How it's assessed

Written exam: 1 hour 45 minutes

96 marks, plus 6 marks for spelling, punctuation and grammar (SPaG) 50% of GCSE

Four religious, philosophical and ethical studies themes or two religious, philosophical and ethical studies themes

Religious, philosophical and ethical studies themes:

Theme A: Relationships and families.

Theme B: Religion and life.

Theme C: The existence of God and revelation.

Theme D: Religion, peace and conflict.

Theme E: Religion, crime and punishment.

Theme F: Religion, human rights and social justice.

## How it's assessed

Written exam: 1 hour 45 minutes

96 marks, plus 3 marks for spelling, punctuation and grammar (SPaG) 50% of GCSE

## Questions

Each theme has a common structure of one five-part question of 1, 2, 4, 5 and 12 marks. Each theme is marked out of 24.

## Reading

### AQA GCSE Religious Studies A: Buddhism

*By Cynthia Bartlett (series editor), Kevin James and author Nagapriya*

Published by Oxford University Press,

ISBN-13: 978-0-19-837032-1

Price: £17.99

Publication date: 21 November 2016

### AQA GCSE Religious Studies A: Christianity

*Cynthia Bartlett (series editor), Marianne Fleming, Peter Smith, David Worden*

Published by Oxford University Press,

ISBN-13: 978-0-19-837033-8



# GCSE SPANISH

## What is GCSE Spanish?

Knowledge of a second language is now generally recognised as an indispensable tool, whether for going on holiday or for work. Spanish at GCSE level provides students with the essentials of communication, enabling you to describe events and situations and convey your thoughts and feelings to a basic level and develop knowledge and understanding of Spanish grammar. The course covers three broad themes, relating issues to Spain, Central & South America and other Hispanophone regions.

1. Identity & Culture
2. Local, national, international and global areas of interest
3. Current and future study and employment

## The Specification

AQA Spanish (8668H or 8668F) Higher Tier (H), for grades 4 – 9; Foundation Tier (F) for grades 1 – 5.

## Assessment

### Paper 1 Listening

45 mins (H); 35 mins (F) exam | 25%

### Paper 2 Speaking

10-12 mins (H); 7-9 mins (F) | 25%

### Paper 3 Reading

1 hour (H); 45 mins (F) exam | 25%

### Paper 4 Writing

1 hr 15 mins (H); 1 hour (F) exam | 25%

## Course content

### Paper 1 Listening

- Section A – questions in English, to be answered in English or non-verbally
- Section B – questions in Spanish, to be answered in Spanish or non-verbally.

### Paper 2 Speaking

The format is the same at Foundation Tier and Higher Tier, but with different stimulus questions for the Photo card and different stimulus materials for the Role-play. The timings are different too:

- Role-play – 15 marks (2 minutes at Foundation Tier; 2 minutes at Higher Tier)
- Photo card – 15 marks (2 minutes at Foundation Tier; 3 minutes at Higher Tier)
- General conversation – 30 marks (3–5 minutes at Foundation Tier; 5–7 minutes at Higher Tier)

### Paper 3 Reading

The format is the same at Foundation Tier and Higher Tier, but with different levels of text.

- Section A – Questions in English, to be answered in English or non-verbally
- Section B – Questions in Spanish, to be answered in Spanish or non-verbally
- Section C – Translation from Spanish into English - a minimum of 35 words (F) and 50 words (H)

### Paper 4 Writing

- Foundation: Short message, short passage and a structured writing task in Spanish which presents facts and expresses ideas and opinions; Translation from English into Spanish
- Higher: Structured writing task, plus an open-ended task where students must express and justify points of view in Spanish where appropriate; Translation from English into Spanish.



## Reading

### AQA Spanish Higher

By Various

Published by Oxford Kerboodle, ISBN 9780198365877 Kerboodle resources online





BIRMINGHAM **0121 454 9637**

16-18 Greenfield Crescent  
Birmingham B15 3AU

**birmingham@mpw.ac.uk**

LONDON **020 7835 1355**

90-92 Queen's Gate  
London SW7 5AB

**london@mpw.ac.uk**

CAMBRIDGE **01223 350158**

3-4 Brookside  
Cambridge CB2 1JE

**cambridge@mpw.ac.uk**

**www.mpw.ac.uk**

---