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# **GCSE subject criteria for additional applied science**

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December 2009

Ofqual/09/4661

# Contents

Introduction.....	2
Aims and learning outcomes .....	3
Subject content.....	4
Assessment objectives.....	6
Scheme of assessment .....	6
Grade descriptions .....	7

## Introduction

1. GCSE subject criteria set out the knowledge, understanding, skills and assessment objectives common to all GCSE specifications in additional applied science. They provide the framework within which an awarding organisation creates the detail of the specification.
2. Specifications must also meet the regulators' general requirements, including the common and GCSE criteria as defined in *The statutory regulation of external qualifications* (QCA/04/1293).
3. Subject criteria are intended to:
  - help ensure consistent and comparable standards in the same subject across the awarding organisations
  - ensure that the rigour of GCSE is maintained
  - ensure that specifications build on the knowledge, understanding and skills established by the national curricula for England, Northern Ireland and Wales, and facilitate progression to higher level qualifications in science
  - help higher education institutions, employers and other stakeholders, such as learners and parents/guardians, know what has been studied and assessed.
4. Any GCSE specification that contains significant elements of additional applied science must be consistent with the relevant parts of these subject criteria.
5. Specifications must contain sufficient additional appropriate content to merit 120-140 guided learning hours.

## Aims and learning outcomes

6. GCSE specifications in additional applied science should encourage learners to be inspired, motivated and challenged by following a broad, coherent, practical, satisfying and worthwhile course of study. They should provide insight into and experience of how science works, stimulating learners' curiosity and encouraging them to develop an understanding of science, its applications and its relationship with the world of work. Specifications should prepare learners to make informed decisions about further study and training opportunities in applied science and career opportunities.
  
7. GCSE specifications in additional applied science must enable learners to:
  - develop their knowledge and understanding of science and its applications
  - develop their understanding of the benefits, drawbacks and risks of scientific developments for industry, the economy and society
  - develop their understanding of the need for monitoring and regulation of the work of practitioners in science and science-related industries
  - develop their awareness of risk factors and their ability to assess potential risks and manage them in practical and workplace contexts
  - develop their understanding of the use of scientific protocols and standard procedures in the laboratory and the work place
  - develop their understanding of the scientific process
  - develop their practical, problem-solving, enquiry and scientific modelling skills and understanding in laboratory, and work related contexts
  - develop their understanding of the relationships between data, evidence and explanations and their ability to evaluate scientific methods, evidence and conclusions
  - develop their communication, mathematics and technology skills in scientific contexts.

## Subject content

8. The content of GCSE specifications in additional applied science must reflect the learning outcomes
9. GCSE specifications in additional applied science must build on the programmes of study at key stage 4
10. GCSE specifications in additional applied science must require learners to develop the knowledge, skills and understanding specified below.
11. GCSE specifications in additional applied science must ensure the qualification is comparable in content and range with other GCSE science qualifications
12. GCSE specifications in additional applied science must require learners to demonstrate knowledge and understanding in a range of scientific contexts including biological, chemical and physical:
  - the effects of science and its applications on society, industry, the economy and the environment including how scientific applications, technologies and techniques change over time in response to scientific or societal changes
  - the use of science in industry and in the world of work and the contribution of science to the economy
  - the responsibilities of employees, organisations, regulators and governments including health and safety and ethical considerations
  - the role of evidence, theories and hypotheses in the scientific process
  - the importance of following procedures and protocols and managing risks
  - the importance of working accurately and safely
  - the importance of the quality, quantity and accuracy of data collected
  - monitoring and controlling systems and processes
  - the use of electrical or electronic systems for instrumentation and/or communication
  - biotechnology and its applications including the reproduction and cultivation of living organisms

- how organic resources are processed to produce high quality products including food production and agribusiness
  - human physiology and biomechanics in the context of health and fitness
  - the use of observation, detection and separation techniques in analysis
  - the use of reactions to make new chemicals for economic and industrial purposes
  - the properties of materials and how these determine their uses
13. GCSE specifications in additional applied science must require learners to develop the ability to:
- use models to explain scientific observations and processes
  - use scientific ideas, models and evidence to explain applications of science
  - devise methods to solve problems
  - assess risks for the collection of numerical and other data
  - manage risks when using practical techniques, carrying out standard procedures and solving practical problems
  - evaluate methods used to solve practical problems
  - collect primary data
  - process primary and secondary data
  - analyse and interpret primary and secondary data
  - assess the validity and quality of evidence
  - draw evidence-based conclusions
  - use scientific, technical and mathematical language, conventions, symbols and techniques.

## Assessment objectives

14. All specifications in additional applied science must require candidates to demonstrate their ability to:

<b>Assessment objectives</b>		<b>Weighting (%)</b>
<b>AO1</b>	Recall, select and communicate their knowledge and understanding of science	25–35
<b>AO2</b>	Apply skills, knowledge and understanding in applied contexts	35–45
<b>AO3</b>	Analyse and evaluate evidence, make reasoned judgements and draw conclusions based on evidence	25–35

## Scheme of assessment

15. GCSE specifications in additional applied science must allocate a weighting of 40 per cent to external assessment and a weighting of 60 per cent to controlled assessment in the overall scheme of assessment.
16. Question papers must be targeted at either foundation or higher tier.

## Grade descriptions

17. Grade descriptions are provided to give a general indication of the standards of achievement likely to have been shown by candidates awarded particular grades. The descriptions must be interpreted in relation to the content in the specification; they are not designed to define that content.
18. The grade awarded will depend in practice upon the extent to which the candidate has met the assessment objectives overall. Shortcomings in some aspects of candidates' performance in the assessment may be balanced by better performances in others.

<b>Grade</b>	<b>Description</b>
<b>A</b>	
<b>C</b>	
<b>F</b>	

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First published in 2009.

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