



**QUALIFICATION  
AWAITING  
ACCREDITATION**

## GCSE (9-1) Computer Science



[ocr.org.uk/gcsecomputerscience](https://ocr.org.uk/gcsecomputerscience)

**OCR**  
Oxford Cambridge and RSA

## Reform – an update

### GCSE and A Levels reform: An update

The first teaching of new A Levels and GCSEs begins in September 2015. We have been accredited by Ofqual for all of our reformed qualifications for first teaching from September 2015.

We are currently working on the development of a range of qualifications for first teaching from September 2016. These qualifications will be submitted to Ofqual for accreditation in 2015.

### Background to the reforms

The former Secretary of State for Education, Michael Gove, initiated the reform of GCSEs and A Levels in February 2013, asking Ofqual to implement changes that would lead to new qualifications.

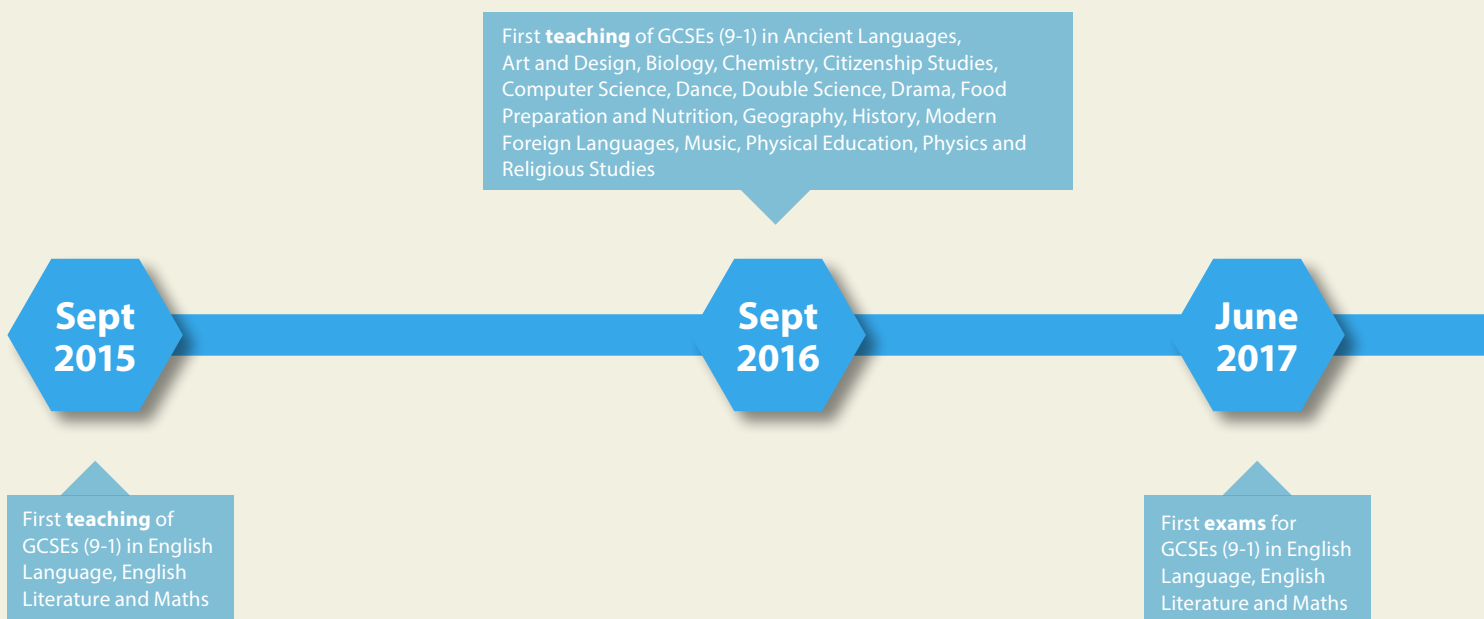
By reforming GCSEs and A Levels, the Department for Education (DfE) intends to:

- Make the qualifications more ambitious
- Better prepare young people for employment and further study

- Give everyone greater confidence in the integrity and reliability of the qualifications system.

The Government has stated that GCSEs will demand more from all students and that the purpose of taking A Levels is primarily for entry to university – changes are needed so students are better prepared to start their university course.

## GCSE timeline



## Changes to Assessment

Key structural features of the new GCSEs:

- Linear GCSEs with assessment at the end of the two-year course in June
- Tiering in certain subjects only, such as Maths and Modern Foreign Languages
- Assessment predominantly by external exam only
- A new 9-1 grading system (9 = top level)
- Re-sit opportunities in November for Maths and English Language only.

School accountability and performance measures key headlines:

- Progress across a suite of 8 subjects (Progress 8)
- Attainment across 8 subjects (Attainment 8)
- The percentage of pupils achieving a C grade or better in English and maths
- The EBacc.

For more information refer to [ocr.org.uk/gcsereform](https://ocr.org.uk/gcsereform)

First **teaching** of GCSEs (9-1) in a range of further subjects (Ofqual is consulting on the principles for other subjects to be included as GCSEs)

**Sept  
2017**

**June  
2018**

First **exams** in GCSEs (9-1) in Ancient Languages, Art and Design, Biology, Chemistry, Citizenship Studies, Computer Science, Dance, Double Science, Drama, Food Preparation and Nutrition, Geography, History, Modern Foreign Languages, Music, Physical Education, Physics and Religious Studies

First **exams** for GCSEs (9-1) in other subjects

**June  
2019**

# Introducing Computer Science changes – at a glance

## GCSE (9-1) Computer Science

The new OCR GCSE (9-1) Computer Science has taken the best bits from our extremely successful GCSE Computing specification and we have modernised and reformed it into a specification that is teacher friendly, dependable and worthwhile.

The new specification is split into three components:

### Component 01 – Computer Systems

The first component is an exam focused on computer systems covering the physical elements of computer science and the associated theory.

### Component 02 – Computational Thinking, Algorithms and Programming

This component is focused on the core theory of computer science and the application of computer science principles.

### Component 02 – Programming Project (non-exam assessment)

This component is the non-exam assessment where candidates will be challenged by a range of exciting and engaging tasks to apply the knowledge and skills they have learned.

Our Computer Science qualification will, above all else, be relevant to the modern and changing world of computer science. Computer Science is a practical subject where learners can apply the knowledge and skills learned in the classroom to real-world problems. It is an intensely creative subject that involves invention and excitement. Our Computer Science qualification will value computational thinking, helping learners to develop the skills to solve problems and design systems that do so.

These skills will be the best preparation for learners who want to go on to study Computer Science at AS and A Level and beyond. The qualification will also provide a good grounding for other subject areas that require computational thinking and analytical skills.





# Content Overview

## GCSE (9-1) Computer Science

The content for OCR GCSE (9-1) Computer Science has been improved and reformed to meet the demands of a modern and evolving computer science industry and educational sphere.

| Component title   | Component overview   |
|---|--|
| <b>Computer Systems</b>                                   | <ul style="list-style-type: none"> <li>• Systems architecture</li> <li>• Memory</li> <li>• Storage</li> <li>• Wired and wireless networks</li> <li>• Network topologies, protocols and layers</li> <li>• Network security</li> <li>• System software</li> <li>• Moral, social, legal, cultural and environmental concerns</li> </ul> |
| <b>Computational Thinking, Algorithms and Programming</b> | <ul style="list-style-type: none"> <li>• Translators and facilities of languages</li> <li>• Algorithms</li> <li>• High- and low-level programming</li> <li>• Computational logic</li> <li>• Data representation</li> </ul>   |
| <b>Programming Project</b>                                | <ul style="list-style-type: none"> <li>• Programming techniques</li> <li>• Design</li> <li>• Development</li> <li>• Effectiveness and efficiency</li> <li>• Technical understanding</li> <li>• Testing, evaluation and conclusions</li> </ul>  |

# What's staying the same, what's changing?

## GCSE (9-1) Computer Science

|                   | What's staying the same?   | What's changing?  |
|-------------------|--|---|
| <b>Structure</b>  | The structure of the non-exam assessment is remaining relatively unchanged but with a reduced weighting (20%). | The course is now split into two exam papers with now only one non-exam assessment.   |
| <b>Content</b>    | Much of the content remains but in more detail than before.  | The need to study some of the older/redundant technologies has been removed.<br>Networking and security are also additional content.<br>There is more emphasis on computational thinking. |
| <b>Assessment</b> | The mark schemes are similar to A453 but with revised Assessment Objective weightings.                         | Two exams (80%)<br>One non-exam assessment (20%).   |

## Assessment Overview

### GCSE (9-1) Computer Science

The assessment consists of two written examinations and an externally moderated non-exam assessment.

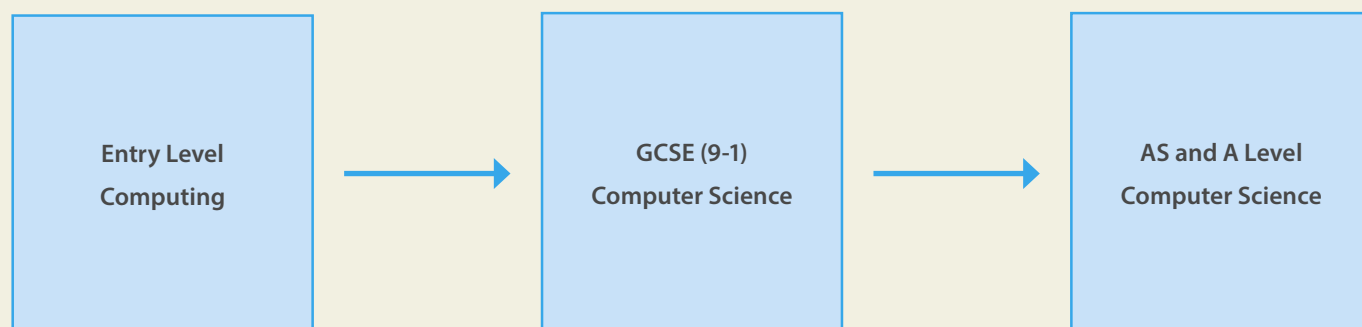
|                     |  | Marks | Duration             | Weighting             |
|---------------------|--|-------|----------------------|-----------------------|
| <b>Component 01</b> | <b>Computer Systems</b> <ul style="list-style-type: none"> <li>• Systems architecture</li> <li>• Memory</li> <li>• Storage</li> <li>• Wired and wireless networks</li> <li>• Network topologies, protocols and layers</li> <li>• Network security</li> <li>• System software</li> <li>• Moral, social, legal, cultural and environmental concerns</li> </ul> | 80    | 1 hour<br>30 minutes | 40% of the total GCSE |
| <b>Component 02</b> | <b>Computational Thinking, Algorithms and Programming</b> <ul style="list-style-type: none"> <li>• Translators and facilities of languages</li> <li>• Algorithms</li> <li>• High- and low-level programming</li> <li>• Computational logic</li> <li>• Data representation</li> </ul>   | 80    | 1 hour<br>30 minutes | 40% of the total GCSE |
| <b>Component 03</b> | <b>Programming Project</b> <ul style="list-style-type: none"> <li>• Programming techniques</li> <li>• Design</li> <li>• Development</li> <li>• Effectiveness and efficiency</li> <li>• Technical understanding</li> <li>• Testing, evaluation and conclusions</li> </ul>   | 40    | Approx.<br>20 hours  | 20% of the total GCSE |

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## Progression pathways

The new specification will have a clear pathway from Entry Level through GCSE and on to A Level, which will enable students to progress from Key Stage 3 through to Key Stage 4 and on to AS and A Level.



## Specialist Advice and Guidance

Resources and support for our GCSE (9-1) Computer Science qualifications, developed through collaboration between our Subject Specialists, teachers and other subject experts, are available from our website.

### Subject Specialist Support

OCR Subject Specialists provide information and support to schools including specification and non-exam assessment advice, updates on resource developments and a range of training opportunities.

Subject Specialists work with subject communities through a range of networks to ensure the sharing of ideas and expertise supporting teachers and students alike. Subject Specialists are dedicated to working with developers to help produce specifications and the resources needed to support these qualifications during development, an essential part of which is working alongside teachers through the Teacher Advisory Groups to obtain genuine honest feedback.

You can contact our Computer Science Subject Specialists for specialist advice, guidance and support.

Meet the team at [ocr.org.uk/computerscienceteam](https://ocr.org.uk/computerscienceteam)



Robert Leeman



Vinay Thawait

### Contact them at:

**01223 553998**

[computerscience@ocr.org.uk](mailto:computerscience@ocr.org.uk)

[@OCR ICT](https://twitter.com/OCR_ICT)

To stay up to date with all the relevant news about our qualifications, register for email updates at

[ocr.org.uk/updates](https://ocr.org.uk/updates)

### Computer Science Community

The social network is a free platform where teachers can engage with each other – and with us – to find and offer guidance, discover and share ideas, best practice and a range of Computer Science support materials.

To sign up, go to [social.ocr.org.uk](https://social.ocr.org.uk)





## Resources

Our aim is to help you at every stage of the introduction of a new specification and we're working hard to provide a practical package of support in close consultation with teachers and other experts.

For a start, we'll provide a range of high-quality creative resources. Tailored to the needs of each subject, their focus is on supporting creative teaching approaches and progression for all students. We see our resources as a body of knowledge that will grow throughout the lifetime of the specifications. They are built on the best practice we've identified from our ongoing discussions with the teaching community.

We are also developing exciting new digital tools to help you explore and interact with our resources. The Scheme of Work Builder will allow you to construct personalised schemes of work and you'll be able to add in the specification content, our wide range of resources and teaching suggestions, as well as add your own content and materials.

Please visit our website at [ocr.org.uk/reformresources](http://ocr.org.uk/reformresources) for details of the new tools we are developing and to take a look at the types of resources on offer.

### Publisher Partner Resources

We're working with a number of leading publishers who are publishing resources for the new GCSE, AS and A Level specifications for 2016. We're working together to make sure that the resources embed the fundamental content of each specification, while delivering the breadth and depth needed to succeed at GCSE, A Level and beyond.

You can find more details about all our publisher partners and all the resources they're providing on our website at [ocr.org.uk/publishing-partners](http://ocr.org.uk/publishing-partners)

## Free GCSE and A Level reform training events

### An introduction to the new specifications

We're running free training events throughout the next academic year to help you get to grips with the reformed qualifications for first teaching in September 2016.

### Practical events, created with you in mind

These carefully planned free events are designed to help smooth the path to the first teaching of reformed qualifications and provide you with an understanding of:

- The new specification content, structure and assessment
- The differences between the existing and new specifications
- The resources and support available for qualifications.

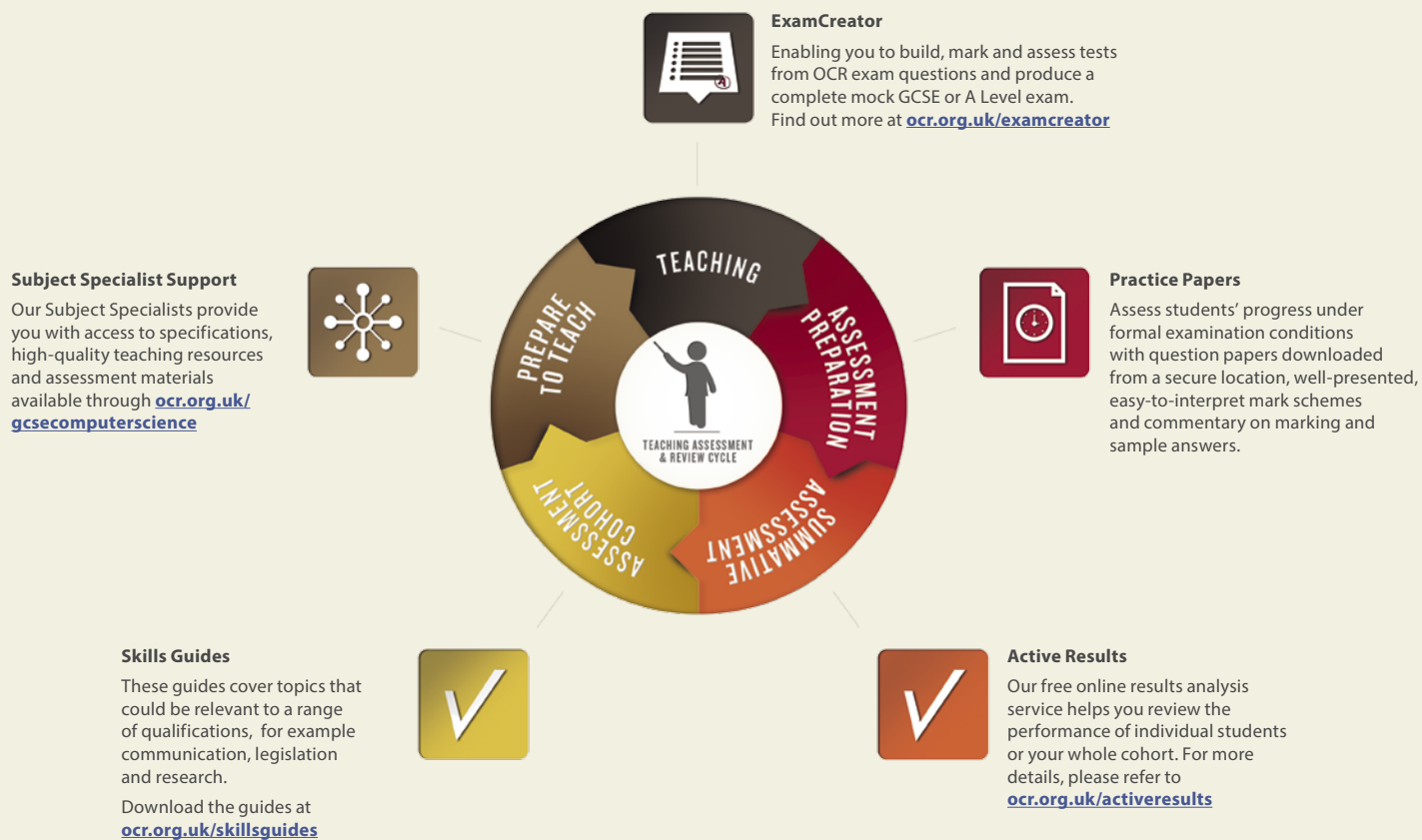
They'll give you the opportunity to speak face to face with our team, and network and discuss teaching approaches with colleagues.

To receive more information about dates, and the wide range of locations as we release them, please register for A Level or GCSE reform email updates at [ocr.org.uk/updates](http://ocr.org.uk/updates)

# Assessment Preparation and Analysis Service

We recognise that the introduction of a new specification can bring challenges for implementation and teaching. Our aim is to help you at every stage and we're working hard to provide a practical package of support in close consultation with teachers and other experts so we can help you to make the changes.

Along with subject-specific resources and tools, you'll also have access to a selection of generic resources that focus on skills development, professional guidance for teachers and results data analysis.



Building a practical package of support and resources to support you at every stage of the introduction of a new specification. In close consultation with teachers and industry experts.

# Extended Project Qualification (EPQ)

## Giving your students the edge

Our **Extended Project Qualification (EPQ)** can provide your students with the skills that universities look for, to help them stand out from the crowd.

## Four steps to success



It's straightforward for your students to take our inspiring EPQ. They can enjoy the freedom of working in their own way as they undertake a project based either on a subject they're studying or in an area of personal interest.

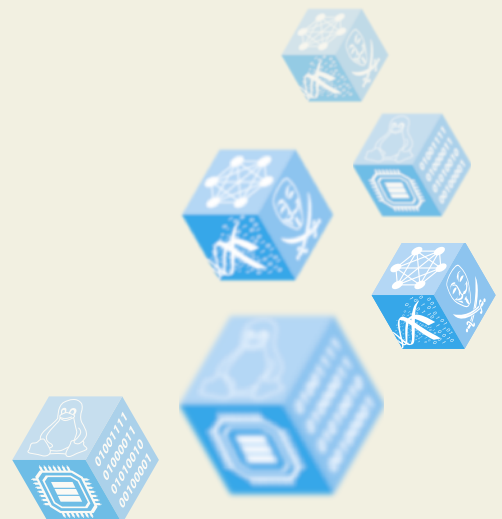
With its skills-based assessed assignment, the qualification is ideal for helping students improve transferable skills such as planning, research, analysis and evaluation, and they can take it as part of either an academic or vocational curriculum.

It's the equivalent of an AS Level and designed as a one-year course.

## Three reasons to deliver the EPQ

- It's worth up to 70 UCAS points
- There is real flexibility and ease of delivery – it can be taught by non-specialist staff and run over one or two years, and it has two entry points (January and June)
- Fewer guided learning hours than AS Level and requires fewer resources.

Find out more at [ocr.org.uk/extendedproject](https://ocr.org.uk/extendedproject)



## Download high-quality, exciting and innovative GCSE (9-1) Computer Science resources from [ocr.org.uk/gcsecomputerscience](https://ocr.org.uk/gcsecomputerscience)

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