GCSE (9-1) Computer Science
Computational Thinking in Context

Discover our new qualification for 2016

Look out for Pearson’s published resources too!
Computational Thinking in Context

This brochure will provide an overview of our new Edexcel specification for GCSE Computer Science from 2016.

As both an awarding body and a publisher, we’ll outline how our specification will inspire your students, address changes to the qualification, and we’ll also outline the high-quality support and resources you can expect.

Our qualification:

- develops students’ ability to apply ‘computational thinking’ ........................................ Page 4
- has a specification with a trusted approach and familiar content ........................................ Page 5
- has clear assessments accessible to all .................................. Page 6
- fosters skills and knowledge for progression to further study ........................................ Page 7
- provides a full programme of support and expert advice ................................................ Page 8

Working with you

We wanted to make sure our new Edexcel GCSE Computer Science specification was shaped by you, for your students, to help them achieve their full potential. That’s why we’ve been working with practising teachers and the Computer Science community to design our brand new qualification.

Our new Edexcel GCSE Computer Science specification

Our new Edexcel GCSE specification is reassuringly familiar, and contains three components, **Principles of Computer Science**, **Application of Computational Thinking** and a **Computer Science Project**. It offers a wide range of choice and flexibility so you can appeal to students’ interests and your departmental specialisms.

<table>
<thead>
<tr>
<th>Component</th>
<th>Title</th>
<th>Overview</th>
<th>Summary of assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1</td>
<td>Principles of Computer Science</td>
<td>All Topics</td>
<td>Examination. Multiple choice, short and extended open response questions.</td>
</tr>
<tr>
<td></td>
<td>40%</td>
<td>1hr 40mins</td>
<td></td>
</tr>
<tr>
<td>Component 2</td>
<td>Application of Computational Thinking</td>
<td>Main focus on Topics 1 and 2, but may draw on all other topics</td>
<td>Examination, based on a scenario. Short and extended open response questions.</td>
</tr>
<tr>
<td></td>
<td>40%</td>
<td>2hrs</td>
<td></td>
</tr>
<tr>
<td>Component 3</td>
<td>Computer Science Project</td>
<td>A designed, tested and refined program, and a written report</td>
<td>Non-examined supervised assessment. A levels-based mark scheme, over four stages of development.</td>
</tr>
<tr>
<td></td>
<td>20%</td>
<td>20hrs</td>
<td></td>
</tr>
</tbody>
</table>

Remember: GCSE Computer Science counts towards the EBacc science measure.

Look out for Pearson’s published resources on page 11!
Develops students’ ability to apply ‘computational thinking’

Our new Edexcel GCSE Computer Science specification enables students to apply computational thinking in context, across both examined and non-examined assessments (NEA). We build students’ ability to think computationally, within the context of a single scenario, and prepare students for real-world computer challenges.

Computational thinking is integrated throughout the content to embed this essential approach to the subject.

“Computational thinking will be a fundamental skill used by everyone by the middle of the 21st Century. Just like reading, writing and arithmetic.”

Wing (2011) Computational Thinking

A specification with a trusted approach and familiar content

Our qualification is modern and relevant but has changed very little as we anticipated the recent changes. It follows the same approach as our legacy specification and contains familiar content, updated where necessary to be relevant in today’s world.

We have worked with:

- Teachers from a wide range of schools and colleges, and with different levels of experience of teaching Computer Science
- Our Expert Computer Science Advisory Group comprising university academics from University of Greenwich, King’s College London and Brighton University
- British Computer Society
- Computing at Schools

Our content is split into six clear topics, giving you flexibility in how you approach the learning requirements.

Our topics are:

- problem solving
- data
- communication
- programming
- computers
- the internet and the bigger picture
Describe how data is transmitted from device B to device C.

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Sample GCSE exam question from Unit 1: Principles of Computer Science.
Full programme of support and advice

We’ll provide a full programme of teaching and learning support to help you to plan, teach and track/asses our new Edexcel GCSE (9-1) Computer Science with confidence.

Subject support

If you have any questions, get in touch with Tim Brady, Subject Advisor for Computer Science and ICT. You can sign up via the website to receive emails from Tim and be kept up to date about key dates, training events, news and resources.

Visit online: www.edexcel.com/GCSECompSci2016
Email: TeachingComputerScience@pearson.com
Follow Tim on Twitter: @Pearson_CS
Join the Edexcel GCSE Computer Science Facebook group

Plan

There will be a full range of free support available to help you to plan for the new qualification.

We’ll provide:

- an editable course planner and schemes of work that you can adapt to suit your department
- a Getting Started guide, which will give you an overview of our new Edexcel GCSE Computer Science qualification to help you understand what the changes mean for you and your students
- mapping documents to highlight the key differences and similarities between this qualification and legacy qualifications.
Teach

Our free and paid-for teaching and learning support will help you to deliver the new qualification with confidence.

Our support includes:

- **lesson materials**, including booklets of suggested activities for every lesson, designed to save you time when planning your Edexcel GCSE Computer Science course
- **activity solutions** for the suggested lesson activities in a student-friendly format, designed to save you time
- **materials on specific content**, for example, a useful reference document showing various ways of representing common algorithms
- **teacher support materials**, for example our Python guide, which has been produced as a helpful reference document for you and your students when writing code in Python.

Published Resources*

Pearson will also be producing a set of paid-for teaching and learning resources* to support you with our new 2016 Edexcel GCSE Computer Science specification.

- A fully illustrated **Student Book** covering all 3 components, designed to inspire and motivate students by relating and applying skills to real-world contexts and making learning relevant.
- An **Activebook** (e-book) version of the Student Book for schools and colleges, with multiple user licences to provide flexibility in the way you teach.
- A **Revision Guide** and **Revision Workbook** in print and digital formats to support preparation for the external assessments.

*These resources have not yet been endorsed. This information is correct as of 31st October 2015, but may be subject to change. You do not have to purchase any resources to deliver our qualification. Resources are available from other publishers.

Register your interest to receive further information and request an evaluation pack at:

www.pearsonschools.co.uk/GCSE2016launch

Find out more about our free support at:


Lesson 22 activities

Activity 22.1

Complete this diagram of the fetch-decode execute cycle using the labels below.

**Labels**

- FETCH
- DECODE
- EXECUTE

- Fetches the next instruction from memory and increments program counter
- Decodes the bit pattern (machine code) into the instruction to be executed
- Executes the instruction and stores the results in memory or registers

Sample lesson activity.

Pearson’s paid-for resources, as well as other endorsed resources, are not a prerequisite for the delivery of our Edexcel specifications.
Supporting you every step of the way

Track and Assess

When it comes to tracking progress and preparing for assessment, we’ll provide support and resources to help you and your students throughout the course.

Sample Assessment Materials, so that you can get to grips with the format of the papers and the level of demand as quickly as possible.

Exemplar materials with commentaries for both examined and non-examined components.

Tools to help you track progress

examWizard

examWizard is a free exam preparation tool containing a bank of past Edexcel GCSE Computer Science questions, mark schemes and examiners’ reports. Coming in 2016 for Edexcel GCSE Computer Science.

www.examwizard.co.uk

ResultsPlus

ResultsPlus provides the most detailed analysis available of your students’ exam performance. Widely used by teachers across the country, this free online service will help you identify the topics and skills where further learning would benefit your students.

www.edexcel.com/resultsplus

Develop

We’re running a range of free events in the lead up to first teaching to help you plan for 2016 with confidence.

Launch events

Our free launch events will help you to learn more about the new specification and the support we are offering.

You’ll benefit from the opportunity to:

- hear a full overview to the changes to GCSE Computer Science
- explore the content of our Edexcel specification and what it offers you and your students
- speak to one of our Computer Science team
- find out about the range of support available to help you make the transition.

Getting Ready to Teach events

As part of the support we’re providing to help you with delivering our new Edexcel GCSE Computer Science (9-1) qualification, we’re running free Getting Ready to Teach events.

Each whole-day event will look at how the new Edexcel GCSE Computer Science (9-1) can be delivered in the classroom. Topics we will explore include:

- the structure, content and assessment of our new specification
- teaching strategies
- the full range of support available for delivering the new qualification.

You’ll also have the opportunity to network with other teachers, discuss best practice and meet our Computer Science subject team.
Key facts: GCSE Computer Science (9-1)

The following changes will apply to all awarding organisations’ specifications.

- GCSE specifications in Computer Science will be assessed through a combination of 80% written examination(s) and 20% non-examined assessment.
- Programming languages used will be high-level, with a textual program definition.
- The non-examined assessment will take the form of a project, which will include:
  - a program designed, written, refined and tested by the learner, either to a specification or to solve a problem
  - a written report.

Learn more: www.edexcel.com/GCSECompSci2016