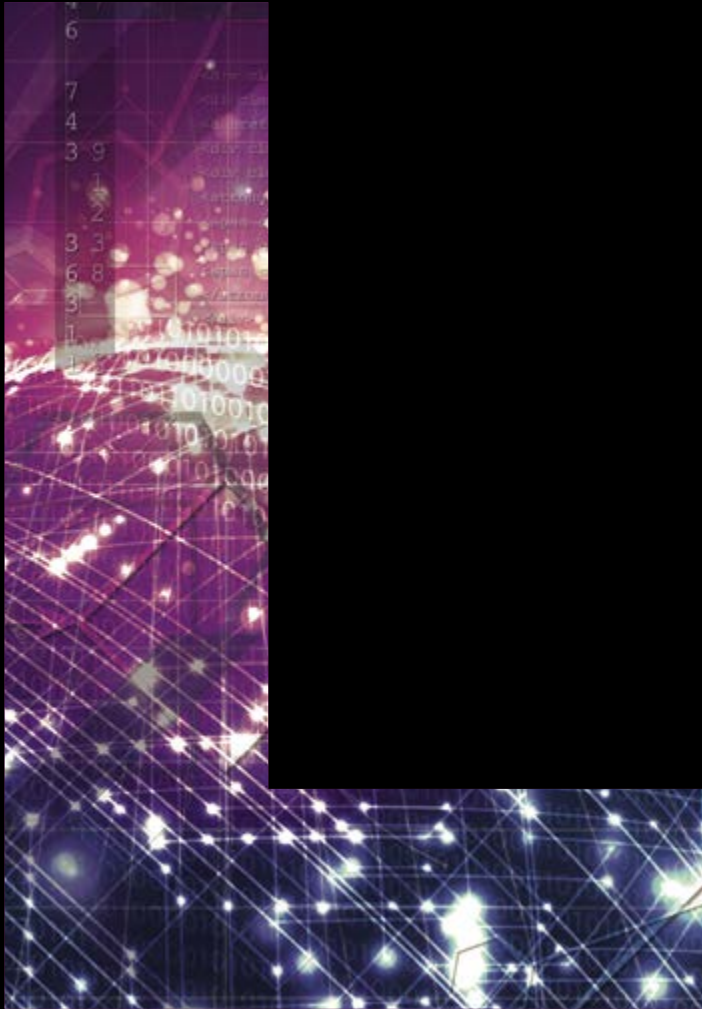# COMPUTING

LEADING THE WAY IN COMPUTER SCIENCE

At OCR, we're the only awarding body to offer you Entry Level, GCSE and A Level qualifications in Computing.

ocr.org.uk/computerscience

OCR
Oxford Cambridge and RSA

EADING THE COMPUTER

WAY IN SCIENCE

At OCR, we're the only awarding body to offer Entry Level, GCSE and A Level qualifications in Computing. All these are designed to give your students the opportunity to develop highly sought-after knowledge and skills, whether they're for the workplace or for everyday life.

The qualifications are backed up by the kind of resources and training that make teaching them more enjoyable. If you're new to teaching Computing, the comprehensive and well-planned support we provide is designed to give you added confidence. If you're an experienced teacher in this field, you'll find we offer the level of resources to help you make your lessons even more exciting and engaging.

Take a look at what our Computer Science qualifications offer you and your students.

ENTRY LEVEL

ENTRY LEVEL COMPUTING:
ONLY AVAILABLE FROM OCR

Opening up the subject to a wider range of students, this is currently the only Entry Level qualification offered in Computing. It's been developed in consultation with teachers and employers to give young students in KS3 and KS4, as well as foundation students, a solid introduction to Computing. It is also an ideal platform for further study in Computing at GCSE and beyond.

THROUGH THIS QUALIFICATION, STUDENTS CAN:

• Develop their understanding of the fundamental hardware of a computer system, common types of software and simple logic

• Acquire the skills to write simple computer programs

• Look at the development of computer technology and the effects it has had.

WHY CHOOSE OCR ENTRY LEVEL COMPUTING?

• **It's engaging and fun.** This course gives students the opportunity to discover how computer technology works and to take a look at what goes on 'behind the scenes'. Through the introduction of programming, it helps them expand their problem-solving skills. For many, it will be a fun and interesting way to develop these transferable skills, which can be applied to further learning and everyday life

• **Teacher involvement.** You can enjoy the freedom and excitement of teaching this qualification, which has been developed to help you inspire your students. It's been designed with you in mind, using a clear and easy-to-understand format, making it straightforward to deliver.

THE STRANDS

Hardware, Software and Logic. This provides a good overview of the workings and functions of a computer, and the function of an operating system and different types of software. It also helps develop an understanding of binary numbers, logic gates and sequencing of instructions.

Programming. Students must plan, write, test and evaluate a simple program.

Trends in Computing. Students are expected to research a computing-related technology (such as mobile phones, social networks) and communicate these findings through a presentation/report.

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GCSE

GCSE COMPUTING:
NOW WITH EXCITING NEW RESOURCES

This carefully planned course gives students a real, in-depth understanding of how computer technology works. It offers an insight into what goes on 'behind the scenes', including computer programming, which many students find absorbing.

THROUGH THIS QUALIFICATION, STUDENTS CAN:

- Develop their understanding of current and emerging technologies and how they work
- Look at the use of algorithms in computer programs
- Become independent and discerning users of IT
- Acquire and apply creative and technical skills, knowledge and understanding of IT in a range of contexts
- Develop computer programs to solve problems
- Evaluate the effectiveness of computer programs/solutions and the impact of computer technology in society.

WHY CHOOSE OCR GCSE COMPUTING?

- It's a great way to develop critical thinking, analysis and problem-solving skills, which can be transferred to further learning and to everyday life
- Students who want to go on to higher study and employment in the field of computer science will find it provides a superb stepping stone
- Exciting new resources: we've teamed up with partners such as Raspberry Pi and Computing At School to invigorate the curriculum and develop new resources
- Computer Science is now part of the English Baccalaureate and is included as one of the qualifications that count towards new school performance measures. Any Computing specifications included in the EBacc have to be approved by BCS (The Chartered Institute for IT) – and our GCSE Computing has been.

THE UNITS

Computer systems and programming. This is assessed by a written paper, which has a mixture of short- and long-answer questions, some of which require students to write program code.

Practical investigation. This will be on a topic chosen from a set of options supplied by OCR (controlled assessment).

Programming project. Students create solutions to computing tasks chosen from a set of options supplied by OCR (controlled assessment).

ALEVEL

A LEVEL COMPUTING:
QUALIFICATION FOR TODAY

This modern qualification gives students a general grounding in computing, including an understanding of computer systems, the principles of programming and problem-solving.

THROUGH THIS QUALIFICATION, STUDENTS CAN DEVELOP:

- The capacity to think creatively, innovatively, analytically, logically and critically
- An understanding of the organisation of computer systems
- The ability to apply skills, knowledge and understanding of computing, including programming, in a range of contexts to solve problems
- The capacity to see relationships between different aspects of the subject
- An understanding of the consequences of using computers, an awareness of emerging technologies and an appreciation of their potential impact on society.

WHY CHOOSE OCR A LEVEL COMPUTING?

- It includes more computer science than traditional ICT
- It includes a practical coursework unit – which is the best way to assess a student's level of practical skills in computing
- There is a simple assessment method, and examination papers are externally assessed
- It is excellent preparation for students looking to take computing studies at degree level, or for anyone considering any kind of career in computing.

THE UNITS

AS LEVEL

- **Computer Fundamentals**. Students look at computing fundamentals, including hardware and software; the presentation, structure and management of data; how data is transmitted and networked; the life cycle of systems development; the characteristics of information systems; and the implications of computer use
- **Programming techniques and logical methods**. Students learn about designing solutions to particular problems; how procedural programs are structured; the types of data and data structures; the common facilities of procedural languages; how to write maintainable programs; and how to test and run solutions.

A LEVEL

- **Advanced Computing Theory**. Students understand the function of operating systems; the function and purpose of translators; how computer architectures are structured; how data is represented, structured and manipulated; high-level language programming paradigms; low-level languages; and how databases function
- **Computing Project**. Through coursework, students gain an understanding of definition, investigation and analysis; system design; software development and testing; documentation; evaluation; and how to produce written reports covering these topics.

**ocr.org.uk/computing**

WITH YOU ALL THE WAY

Working with teachers and other experts, we've created a practical package of high-quality resources and support to help you at every stage.

SUPPORT MATERIAL

This is designed to save you time while you prepare for and teach our specifications. Our essential FREE support includes all this and more:

• Specimen assessment materials and mark schemes

• Exemplar candidate work

• Teacher's Handbook

• Sample schemes of work and lesson plans

• Unofficial teacher's guide for GCSE Computing

Visit **ocr.org.uk/computerscience** to access all our support by selecting the qualification you require.
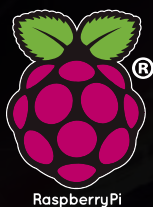
The Raspberry Pi is a low-cost, credit-card-sized, programmable computer developed by the Raspberry Pi Foundation, a charitable organisation linked to Cambridge University. We've been working with Raspberry Pi and leading practitioners to create resources to liven up your lessons. There's more on our website at **ocr.org.uk/raspberrypi**

SERVICES

Answers @ OCR. Find specific, up-to-date information, browse hot topics and FAQs, or email us with your questions with this web-based service.
Visit **answers.ocr.org.uk**

Active Results for GCSE. A free online results analysis service. Find out more at **ocr.org.uk/activeresults**

OCR Interchange. A secure website for centres which offers a variety of services for Exams Officers and teachers. Visit it at **interchange.ocr.org.uk**

OCR social network. Join this free platform to share ideas and best practice, offer guidance and more.
To sign up, go to **social.ocr.org.uk**

OCR Blogs. Read our new **Computing, ICT** and **Design and Technology** blog which is designed to keep you informed of our work and provide an interesting insight into the world of an awarding organisation.
Visit **ocrblogs.org.uk**

CAMBRIDGE GCSE COMPUTING ONLINE

A Cambridge-based partnership of OCR, Cambridge University Press (CUP) and the Raspberry Pi Foundation is behind this first school level MOOC (Massive Open Online Course) created to support teaching and learning of Computing in schools.

Designed primarily to support teachers and 14 to 16-year-old Computing students, the course is accessible to anyone who wants to learn the basics of computer programming and demystify the world of algorithms, logic gates, and RAMs.

This free MOOC is accessible 'on the go' via smartphones and tablets as well as on PCs. It features a rich combination of videos and learning exercises, which can be completed at home or in the classroom. It can also be used as a revision aid or as a self-teaching resource for flipped classrooms.

The online course is aligned to OCR's pioneering GCSE in Computing, and the popular mini 'Raspberry Pi' computer plays a starring role. The GCSE and the Pi have helped to revive interest in Computing in schools, following its absence from the curriculum for a generation

In total, the MOOC will feature over 350 bite-sized videos ranging in length and style to suit different students. Each is presented by experienced Computer Science teachers from across the UK.

Access the MOOC at **cambridgegcsecomputing.org**

PROFESSIONAL DEVELOPMENT PROGRAMME

Take advantage of our improved Professional Development Programme, designed with you in mind. Whether you want to come to face-to-face events, look at our new digital training or search for training materials, you can find what you're looking for all in one place at the CPD Hub.

• An introduction to and understanding of your specification through our online videos

• A review of external assessment presentations to guide you through the lessons learnt from the last exam series.

• Interaction opportunities through our live online events and face-to-face training

• Advancement of your knowledge and re-invigoration of your passion for teaching at our Premier CPD events.

To find out more visit **cpdhub.ocr.org.uk**

A FEW GOOD REASONS TO WORK WITH OCR

- You can enjoy the **freedom and excitement** of teaching qualifications that have been developed to help you inspire students of all abilities

- We've built specifications **with you in mind**, using a clear and easy-to-understand format, making them straightforward for you to deliver

- Our **clear and sensible assessment approach** means that exam papers and requirements are clearly presented and sensibly structured for you and your students

- **Pathways for choice** – we have the broadest range of qualifications and our GCSEs provide an ideal foundation for students to progress to more advanced studies and into the workplace

- **Working in partnership to support you** – together with teachers we've developed a range of practical help and support to save you time. We provide support for you to teach our specifications with confidence and ensure that your students get as much as possible from our qualifications

- As well as providing you with a wide range of support services and resources to pick and choose from, we're also here to help you with specialist advice, guidance and support for those times when you simply need a more individual service.

FOR THE FIRST CHOICE IN COMPUTER SCIENCE, THERE'S ONLY OCR.

HERE'S HOW TO CONTACT US TO FIND OUT MORE AND REGISTER FOR UPDATES:

Phone: 01223 553998

Email: general.qualifications@ocr.org.uk

Fax: 01223 552627

Updates: ocr.org.uk/updates

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