OCR GCSE Computer Science (J277): Long term overview | Sep 2023 - May 2025

GCSE Option: students will study aspects of information technology and computer science at sufficient depth to allow them to progress to higher levels of study or to a professional career.

Students will be taught to:

- develop their capability, creativity and knowledge in computer science, digital media and information technology
- develop and apply their analytical, problem-solving, design, and computational thinking skills
- understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to identify and report a range of concerns.

Source: DfE Computing

Assessment Objective:

AO1. Demonstrate knowledge and understanding of the key concepts and principles of Computer Science.

AO2. Apply knowledge and understanding of key concepts and principles of Computer Science.

AO3. Analyse problems in computational terms:

- to make reasoned judgements
- to design, program, evaluate and refine solutions.

Source: Specification, page 34

Year 10	Lesson	Focus / Topic	Knowledge & Skills	Assessment
Aut1 7 weeks Tue 05 Sep – Fri 20 Oct	Single	Computer systems *part 1/3*	✓ Describe the role of the CPU. ✓ Explain the processes of the fetch-decode-execute cycle.	Formative ✓ Do Now!' starters and plenaries as retrieval practice. ✓ Frequent checking of understanding. ✓ Self-assessment of class activities (recorded using green pen) ✓ Teacher feedback of coding via *Google Collaboratory* Summative to inform data entry ✓ Multiple Choice Quiz ✓ Exam questions from AO1 and AO2 prior to the end of half-term.
	Double	Programming *part 1/6* Sequence	✓ Determine the need for translators. ✓ Use sequence, variables, and input in Python. ✓ Design programs using a flowchart.	
Aut2 7 weeks Mon 30 Oct – Fri 15 Dec	Single	Computer systems *part 2/3*	✓ Determine the role of main memory and secondary storage. ✓ Construct truth tables for three input logic circuits. ✓ Write a program using assembly language (LMC).	
	Double	Programming *part 2/6* Selection	✓ Use randomisation in programs. ✓ Work with arithmetic and logical expressions. ✓ Use selection and nested selection in Python.	

Year 10	Lesson	Focus / Topic	Knowledge & Skills	Assessment
Spr1 6 weeks Tue 02 Jan – Fri 09 Feb	Single	Computer systems *part 3/3*	✓ Construct truth tables for three input logic circuits. ✓ Write a program using assembly language (LMC).	Formative and Summative assessment as *Aut1* and *Aut2.*
	Double	Programming *part 3/6* Iteration	✓ Use a **while** loop and a **for** loop in Python. ✓ Perform validation checks on data entry. ✓ Design programs using pseudocode.	
Spr2 6 weeks Mon 19 Feb – Fri 01 Apr	Single	Algorithms *part 1/2*	✓ Define the terms ‘decomposition’, ‘abstraction’, and ‘algorithmic thinking’. ✓ Use trace tables.	
	Double	Programming *part 4/6* Subroutines	✓ Explain the differences between a procedure and a function. ✓ Describe scope of variables. ✓ Use functions and procedures as part of the structured approach to programming. ✓ Test a program for robustness.	
Sum1 6 weeks Mon 18 Apr – Fri 27 May	Single	Data representations *part 1/2*	✓ Explain how numbers, text, images, and sound are represented using binary digits.	Formative and Summative assessment as *Aut1* and *Aut2.*
	Double	Programming *part 5/6* Strings and lists	✓ Define the term ‘graphical user interface’ (GUI). ✓ Perform string handling operations. ✓ Describe the differences between a list and an array. ✓ Manipulate a list. ✓ Work with 2D lists.	
Sum2 7 weeks Mon 06 Jun – Wed 20 Jul	Single	Data representations *part 2/2*	✓ Perform operations on binary digits. ✓ Convert between units of measurement.	
	Double	Algorithms *part 2/2*	✓ Describe a linear and binary search. ✓ Explain the key algorithms for a bubble, merge, and insertion sort.	

Year 11	Lesson	Focus / Topic	Knowledge & Skills	Assessment
Aut1 8 weeks Thu 08 Sep – Fri 21 Oct *Provisional dates*	Single	Impacts of technology	✓ Determine the ethical, legal, environmental, and cultural impacts of technology.	Formative ✓ Do Now!' starters and plenaries as retrieval practice. ✓ Frequent checking of understanding. ✓ Self-assessment of class activities (recorded using green pen) ✓ Teacher feedback of coding via *Google Collaboratory* Summative to inform data entry ✓ Multiple Choice Quiz ✓ Exam questions from AO1 and AO2 prior to the end of half-term.
	Double	Programming *part 6/6* Dictionaries and data files	✓ Use a record and a dictionary data structure. ✓ Access and modify external data files. ✓ Complete a complex programming project.	
Aut2 7 weeks Mon 31 Oct – Wed 21 Dec *Provisional dates*	Single	Networks	✓ Describe network components. ✓ Explain connectivity and distinguish between the various types. ✓ Describe the four layers of the TCP/IP model. ✓ Protect a network from threats.	
	Double	Programming *part 6/6* Dictionaries and data files	✓ Use a record and a dictionary data structure. ✓ Access and modify external data files. ✓ Complete a complex programming project.	
Spr1 5 weeks Mon 09 Jan – Fri 10 Feb *Provisional dates*	Single	Security	✓ Describe the various ways that users and organisations can be affected by cyberattacks. ✓ Demonstrate how organisations can prevent cyberattacks.	Formative assessment as for Autumn term, followed by summative MCQ.
	Double	Programming *part 6/6* Dictionaries and data files	✓ Use a record and a dictionary data structure. ✓ Access and modify external data files. ✓ Complete a complex programming project.	Formative ✓ Rubric to assess project-based programming work.
Spr2 6 weeks Mon 20 Feb – Thu 27 Mar *Provisional dates*	Single	Revision	✓ Targeted consolidation and revision of Component 01	Formative ✓ Practice exam questions from AO1, AO2 and AO3. Self and Peer assessed and then recorded for posterity.
	Double	Revision	✓ Targeted consolidation and revision of Component 02	

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<tr><th>Year 11</th><th>Lesson</th><th>Focus / Topic</th><th>Knowledge & Skills</th><th>Assessment</th></tr>
<tr><td rowspan="3">Sum1
6 weeks
Mon 14 Apr – Fri 23 May
Provisional dates</td><td>Single</td><td>Revision</td><td>✓ Targeted consolidation and revision of Component 01</td><td rowspan="2"></td></tr>
<tr><td>Double</td><td>Revision</td><td>✓ Targeted consolidation and revision of Component 02</td></tr>
<tr><td colspan="4">Paper 1 — expected during the third week of May 2025
✓ Component 01, worth 80 marks, representing 50% of the total marks. 90 minutes.
✓ There will also be one 8-mark extended response question. This question will enable students to demonstrate the ability to construct and develop a sustained line of reasoning

Paper 2 — expected during the fourth week of May 2025
✓ Component 02, worth 80 marks, representing 50% of the total marks. 90 minutes.
✓ Section A is worth 50 marks, and assesses students’ knowledge and understanding of Computer Science. Students then apply these to problems in computational terms, where they may use an algorithmic approach.
✓ Section B is worth 30 marks and assesses students’ Practical Programming skills and their ability to design, write, test and refine programs.</td></tr>
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