



Computing Curriculum: Statement of Intent

Department Vision

We consider it essential that every child embrace digital literacy and use computer programs to solve problems to meet the demands of the evolving economy. Thus, becoming responsible, competent, confident, and creative users of information and communication technology.

Purpose of study

We believe that it is essential that every child be exposed to digital literacy, information technology and computer science to meet the demands of the evolving economy. Accordingly, we ensure that we offer a high-quality computing education which equips students to use computational thinking and problem-solving skills to find solutions to problems. We also ensure that students are exposed to digital literacy and information technology not only in the computing classroom but also as a cross-curricular link in other subjects. Students are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Students are also equipped to use information technology to create programs, systems, and a range of content. We also believe that all students must be digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology. This will ensure students are ready for the future workplace and are active participants in the digital world.



We value character, competence, and community in our curriculum:

Character

The Oasis ethos and 9 Habits underpin everything we do in our subject. We strive to prepare our students to be the best version of themselves not just for today but for their future. We believe that inclusion is for all and we take every opportunity to promote equality, diversity, and inclusion. Our curriculum is ambitious and is based on the latest research into how the brain and memory work, and this is adapted by teachers so that it can be accessed by all students and is challenging for all.

Competence

The Computing curriculum aims to improve digital fluency by innovative use of IT and digital media so that students can be successful in a world where technology is constantly evolving. Our curriculum develops digital fluency by explicitly teaching digital skills and developing understanding of relevant programmes and technology. Our curriculum recognises the importance of skills and give students the opportunity to access and apply their schema in the real world, developing deep learning and creativity. We instil academic learning habits and embed independent learning opportunities outside of lessons to



allow students to deepen their understanding. With a strong foundation of knowledge and finely developed skills, we bring advantage to the disadvantaged, where barriers to learning are successfully overcome and there are no limits to the achievement and ambition of our students.

Community

Through our curriculum, our students will develop an understanding of the history of technology by considering how technology has evolved and how it continues to do so through artificial intelligence. Our holistic offer includes a promise to all students for opportunities which further broaden the curriculum. These include question and answer sessions with professionals in the computing industry, a tour of the IT facilities on campus and career sessions to enlighten students of the different pathways they can explore.

Aims

The Oasis Academy Silvertown curriculum for Computing aims to ensure that all students:

- Use technology safely, purposefully, and responsibly to create, organise, store, manipulate and retrieve digital content.
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- Analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- Become responsible, competent, confident and creative users of information and communication technology.
- Develop a lifelong appreciation for computing with the knowledge that this skill will be essential in the 21st century.



Computing Curriculum Overview

Year 7

Year 7 students are taught Computing one term per year through enrichment lessons. We aim to develop digital literacy skills in our students by ensuring they understand the basics of Internet safety such as creating strong passwords, understanding, and using privacy settings, and knowing what to share or not on social media. They understand the perils of cyberbullying and seek to stop current bullies and prevent others from cyberbullying. Students are taught how to create PowerPoint presentations apply different skills to their work e.g., slide transitions, formatting skills, hyperlinks, and master slides. Students develop skills using Word and Publisher. E.g., page design, shapes, layout, margins, tables, header, and footer.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7	Digital literacy	Information technology	Digital literacy	Information technology	Digital literacy	Information technology



Year 8

Year 8 students are taught Computing one term per year through enrichment lessons. Students learn a range of ways to use technology safely, respectfully, responsibly, and securely, including protecting their online identity and privacy; recognise inappropriate content, contact, and conduct and know how to report concerns. Students develop skills using Word. E.g., page design, shapes, layout, margins, tables, header, and footer. Students are taught how to create PowerPoint presentations and apply different skills to their work e.g., slide transitions, formatting skills, hyperlinks, and master slides. Students learn how to create spreadsheet using different formulas.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
8	Digital literacy	Information technology	Digital literacy	Information technology	Digital literacy	Information technology



Year 9

Year 9 students are taught Computing one term per year through enrichment lessons. Students learn to change privacy settings, who they should and shouldn't talk to. The dangers of social media, what to do if they are being bullied online, what information they can share. Students also learn about internet safety / reliability and validity, copyright, and cyber abuse. Students understand the structure of programming language (syntax, semantics, variables, data types, statement, sequence, iteration, Selection, functions) and are given the opportunity to write basic program using Python.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
9	Digital literacy	Introduction to programming	Digital literacy	Introduction to programming	Digital literacy	Introduction to programming



Year 10

Computer Science is an option GCSE subject that students can choose in year 10. In the programme, students are given the opportunity to understand and apply the fundamental principles and concepts of Computer Science, including abstraction, decomposition, logic, algorithms, and data representation. Students also analyse problems in computational terms through practical experience of solving problems, including designing, writing, and debugging programs. Students learn to think creatively, innovatively, analytically, logically and critically. Students are taught how to understand the components that make up digital systems, and how they communicate with one another and with other systems, understand the impacts of digital technology to the individual and to wider society and apply mathematical skills relevant to Computer Science. In **Autumn term** students focus on Computer Systems, in particular Systems Architecture, Memory and Storage. Students learn about the purpose of the CPU and factors that can affect its performance. The difference between primary and secondary storage are taught and students explore the need for secondary storage. In **Spring term** students learn about types of network and factors that affect the performance of network. The principles of computational thinking as well as designing, creating and refining algorithms are also covered. In **Summer term** students explore the three basic programming constructs, the use of data types and basic string manipulation.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
10	Computer Systems Unit 1.1 Systems architecture	Computer Systems Unit 1.2 Memory and storage	Computer Systems Unit 1.3 Computer networks, connections and protocols	Computational thinking, algorithms and programming Unit 2.1 Algorithms	Computational thinking, algorithms and programming Unit 2.2 Programming fundamentals	Computational thinking, algorithms and programming Unit 2.4 Boolean logic



Year 11

Year 11 build on the knowledge students garnered in year 10. Students continue to apply the fundamental principles and concepts of Computer Science, including abstraction, decomposition, logic, algorithms, and data representation. Students also analyse problems in computational terms through practical experience of solving problems, including designing, writing, and debugging programs. Students learn to think creatively, innovatively, analytically, logically and critically. Students are taught how to understand the components that make up digital systems, and how they communicate with one another and with other systems, understand the impacts of digital technology to the individual and to wider society and apply mathematical skills relevant to Computer Science. In **Autumn term** students are taught threats to computer systems and networks, identifying and preventing vulnerabilities and the purpose and function of operating systems and utility software. Students also learn about the impacts of digital technology on the wider society and legislation relevant to Computer Science. In **Spring term** students learn to produce robust programs using defensive design and testing. Students also explore characteristics and different levels of programming language and the Integrated Development Environment (IDE). Students are given the opportunity to undertake a programming task or tasks during this term which allow them to develop skills within the following areas when programming; design, write, test and refine.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
11	Computer Systems Unit 1.4 Network security Unit 1.5 Systems software	Computer Systems Unit 1.6 Ethical, legal, cultural and environmental impacts of digital technology	Computational thinking, algorithms and programming Unit 2.3 Producing robust programs Unit 2.5 Programming languages and Integrated Development Environments	Revision	Revision	Revision