|  |
| --- |
| **Vocational IT and Computer Science** |
| **Key Stage 4:****OCR** | **Key Stage 5:****OCR** |
| **Year 7** | **Year 8** | **Year 9** | **Year 10** | **Year 11** | **Year 12** | **Year 13** |
| 2 lessons per week\* | 2 lessons per week\* | 2 lessons per week\* | 3 lessons per week | 3 lessons per week | 6 lessons per week | 6 lessons per week |
| \* Carousel with Design and Technology subjects |
| **Staff** | **Role** | **Staff** | **Role** |
| **Y.Le** | Co-Curriculum Leader | **M. Alemu** | Co-Curriculum Leader |

**Intent: what are we trying to achieve with our curriculum?**

Students who undertake our curriculum are expected to be able to learn, understand and apply core fundamental principles of Computer Science and ICT. The skills that they gain whilst accessing our curriculum should equip them with the digital literacy skills that will be utilised in all areas of employment including gaining experience in writing computer programs for more specialised areas of employment. Students are encouraged to become computational thinkers which will enable them to identify, analyse and solve problems. Students are expected to demonstrate a degree of maturity through all key stages whilst demonstrating that they are assured, and competent, users of information and communication technology.    Students are in KS3 are taught key components of both IT and Computer Science. This allows us to structure our course so that the students are fully equipped with the right amount of knowledge to make an informed decision on the course they would like to study at Key Stage 4. Within our curriculum we offer students two pathways that they can choose depending on their ability and attainment levels - Vocational IT and Computer Science. Depending on the chosen pathway the course is then structured to suit the students' needs at KS4.

Within our curriculum we explore a wide range of areas related to e-safety including cyber bullying, sexting, online risk, digital footprints, and identity theft. This is to ensure that students are fully aware of the potential dangers that can occur whilst they engage with technology online, including the potential impacts that social media can have on the well-being of young people. At KS4, the students study the implications of IT through exploring ethical issues such as privacy, sharing, hacking and data protection to name a few.

Each child is given access to the same set of resources for them to be able to access the curriculum. These include hardware, software and other additional learning materials. In addition, the schools use of One Drive gives students the ability to access all software and reduce the need to have personal licensing so they can complete homework at home. The move towards e-learning corresponds with recent academic research that has highlighted how through e – learning students have across the country demonstrated improved scores on certifications, tests, or other types of evaluation.  The computer suites are also made available to students for Homework club.

Students are given front sheets, so they have an overview of the course content and are encouraged to ask questions so that we can elucidate things that are unclear to them. They have a success criterion for each unit module and are taught how they are graded and what their objectives are. Through this process students are encouraged to become metacognitive learners so they can take ownership of the work.

**Implementation: how do we deliver our curriculum?**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Module 1** | **Module 2** | **Module 3** | **Module 4** | **Module 5** | **Module 6** |
| **Year 7** | **Carousel rotation with Design Department** Topic theme: *Getting Started*  **Lesson 1** Emails **Lesson 2** What is a computer **Lesson 3** SMART internet safety **Lesson 4** Digital Footprint **Lesson 5** Cyber Bullying **Lesson 6** Assessment**Lesson 7** DIRT |
| **Year 8** | **Carousel rotation with Design Department** Topic theme: *Understanding Computers* **Lesson 1** Elements of a computer **Lesson 2** The CPU **Lesson 3** Binary numbers**Lesson 4** Storage **Lesson 5** Ethical, legal and social issues **Lesson 6** Assessment**Lesson 7** DIRT |
| **Year 9** | **Carousel rotation with Design Department**Topic Theme: *Introduction to Python Programming***Lesson 1** Sequencing **Lesson 2** Selection**Lesson 3** Iteration - FOR**Lesson 4** Iteration - WHILE**Lesson 5** Programming Structures**Lesson 6** Assessment**Lesson 7** DIRT |
| **Year 10****IT - iMedia** | **R081: Pre-production skills** | **R081: Pre-production skills** | **R081 Public Examination****R082: Creating digital graphics.**  | **R082: Creating digital graphics.** | **R082: Creating digital graphics.** | **R087: Creating interactive multimedia products** |
| **Year 10 CS** | **Computer Systems including:**-System Architecture-Memory and Storage-Computer networks, connections and protocols | **Computer Systems including:**-Network security -System software-Ethical, legal, cultural and environmental impacts of digital technology | **Computational thinking, algorithms and programming including:**-Algorithms-Programming fundamentals | **Computational thinking, algorithms and programming including:**-Producing robust programs-Boolean Logic | **Computational thinking, algorithms and programming including:**-Programming languages and Integrated development environments | **Practical Programming Task** |
| **Year 11****IT** | R087: Creating interactive multimedia products | R087: Creating interactive multimedia products | R089: Creating a digital video sequence | R089: Creating a digital video sequence | R089: Creating a digital video sequence | Public examination |
| **Year 11 CS** | **Practical Programming Task****Computational thinking, algorithms and programming including:**-Programming languages and Integrated development environments**Computer Systems including:**-System Architecture-Memory and Storage-Computer networks, connections and protocols | **Computational thinking, algorithms and programming including:**-Producing robust programs-Boolean Logic**Computer Systems including:**-Computer networks, connections and protocols | **Computational thinking, algorithms and programming including:**-Algorithms-Programming fundamentals**Computer Systems including:**-Network security -System software | **Computational thinking, algorithms and programming including:**-Algorithms**Computer Systems including:**-Ethical, legal, cultural and environmental impacts of digital technology | **Preparing for COMPONENT 1 and COMPONENT 2** **Public examination** | Public examination |
| **Year 12****CS** | **Computing principles including:**The characters of contemporary processors, inputs, outputs and storage devicesSoftware and software development | **Computing principles including:**ProgrammingExchanging dataData types, data structures and algorithms | **Computing principles including:**Legal, moral, ethical and cultural issuesAlgorithms and problem solving including:Elements of computational thinking | **Computing principles including:**Legal, moral, ethical and cultural issuesAlgorithms and problem solving including:Problem solving and programming.Algorithms  | **Public examination** | **Practical Programming Task** |
| **Year 13****CS** | **Practical Programming Task** | **Computing principles including:**The characters of contemporary processors, inputs, outputs and storage devicesSoftware and software development | **Computing principles including:**Exchanging dataData types, data structures and algorithmsLegal, moral, ethical and cultural issues | **Algorithms and problem solving including:**Elements of computational thinkingProblem solving and programming.Algorithms | **Public examination** | **Public examination** |

The current curriculum that we offer is broad and enables students to access different pathways to match their attainment levels, this is evidenced through the inclusion of both iMedia (Vocational IT) and GCSE Computer Science. At KS4 however, we do not directly teach e - safety as is the case at KS3 but rather explore the potential impacts of e - safety through looking at ethical / legal issues that arise in computing.

As a department we share room space with Business. This is advantageous to us as it means we are often able to interact with the subject leads. This has allowed us the opportunity to build cross curricular links while sharing, resources, and teaching strategies.  Utilising numeracy skills is a core requirement within computing. Basic concepts like BIDMAS are required to be able to participate in core areas of computer science. Therefore, the ability to teach maths concepts effectively to our students has been greatly enhanced through our relationship with the maths department. Literacy skills are developed through task various task where students are required to give long mark answers. To assist in this area, students are giving long extended frameworks as a means of support. In addition, we have been able to cross curricular relations with design and technology which we share KS3 with through a carousel program and humanities where strategies on how to enhance students debating strategies have been utilised effectively in our own subject area.

As the students move through the school, we aim to encourage progression that and self-accountability. As a result of this intended goal, students are given front sheets, so they have an overview of the course content. They have a success criterion that they are made aware of and are encouraged to become metacognitive learners. Students are made aware of the way in which they are assessed and are fully aware of the different grade levels and what they constitute.

Within our department we believed that every student can achieve and make adequate progress regardless of their starting point or external barriers. As a result, we have ensured that our curriculum is accessible to all individuals who participate on the course. To achieve this, we do the following: differentiated tasks, provide frameworks/scaffolding and model answers, and create groups bases on current attainment levels where the students can be both stretched and supported.  For practical tasks, lessons are delivered in chunks to allow students time to observe an ‘I do’ demonstration from the class teacher, before doing a ‘we do’ and ‘you do’ to develop the skills needed for practical tasks.

All lessons are hybrid. This means that all physical lessons are also accessible live via Teams using Office365. All resources used are shared with students and all software used can be accessed remotely using Office365 accounts or websites that host similar platforms to software used in school. For example, all Microsoft software can be accessed using Office365, Python programming platform can be used using Repl and Adobe Photoshop can be used using PhotoPea. By using these resources, all students can access all aspects of the curriculum when working remotely.

All staff within the department are well trained within the area of IT and have developed a good understanding on how to apply the different pedagogical strategies that exist in aiding computer science teachers deliver the course content. Moreover, the staff within the department are given adequate time to plan and prepare for lessons where they can share resources, best practice, and offer each other support through internal moderations.

**Impact: what difference is our curriculum making to pupils?**

Students are taught the principles of information and computation; how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, students are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that students become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

**As a result, learners will:**

* Evaluate how the use of technology can impact society.
* Identify risk of using technology and methods of preventions to mitigate risks when using technology.
* Be equipped with basic IT literacy skills that are transferable in all subject areas.
* Understand how everyday relatable technology has been developed using the product life cycle.
* Develop problem solving skills.
* Understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
* Analyse problems in computational terms, and have repeated practical experience of writing computer programs to solve such problems
* Exercise critical thinking skills when problem solving.
* Use reliable resources to carry out research.
* Build resilience when programming and de-bugging programs.
* Be able to work collaboratively when problem solving.
* Be able to carry out testing on a developed product.
* To analyse results from testing and suggested valid areas of further development.
* Be able to carry out an evaluation for a developed product against a success criterion.
* Evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
* Acknowledge their own success identified by WWWs and act on EBIs/Next Steps provided by teachers.
* Be responsible, competent, confident and creative users of information and communication technology

**Further Information and Guidance**

**GCSE Subject Information Sheet**

**Sixth Form Information Sheet**