COMPUTING CURRICULUM MAP

Intent: The Computing department at UTC Heathrow aims to equip students to participate in a rapidly changing world through challenging and engaging topics. Students will develop an understanding and application in the fundamental principles of computer science, Information Technologies (IT), and Cybersecurity by having the opportunity to write programs design webpages, apply technical skills gained in cybersecurity and produce professional digital products. Some of the critical skills include project management, systems analysis, design, and cybersecurity.

Computing and IT skills are a significant factor in enabling children to be confident, creative and independent learners, and we intend that students have every opportunity available to allow them to achieve this.

The national curriculum for Computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms, and data representation
- can analyse problems in computational terms, and have repeated the practical experience of writing computer programs to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident, and creative information and communication technology, users.

In Computer Science, we are dedicated to ensuring our students leave with the skills to embrace a future of rapidly advancing computer technology fully. Apart from the academic curriculum, students will gain key industry skills through

We intend to develop key skills in IT and cybersecurity, which include:

- IT management for business
- Digital technology solutions
- Computer networks and security
- Business computing and entrepreneurship

Year 10 Information technologies (OCR Nationals J808) curriculum map

Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Unit R012 **LO1** **Understanding tools, techniques, methods and processes for technological solutions.** Learn tools and techniques that can be used to initiate and plan solutions. Learn the project life cycle, the importance of SMART objectives and the different phases. Learn how to use project planning tools **LO3** Learn how data and information can be collected, stored and used. **Cisco Networking Academy courses, Gmetrix Microsoft office courses**	**Unit R012** **LO3** **Understanding tools, techniques, methods and processes for technological solutions** Students are taught about data and information; the methods used to collect and store data as well as the factors that need to be considered when collecting and processing data. **L04** **Understand the factors to be considered when collecting and processing data and storing data/information** Learn about the factors to be considered when collecting, processing, and storing data and information. Students will learn about different threats to data and how to secure data. Students will learn about cyber-attacks and cybersecurity. Learn different legal, ethical and moral considerations when designing software solutions.	**Unit R012** **LO6** **Understanding tools, techniques, methods and processes for technological solutions** Students will learn about the different methods of processing data and presenting the information. Students will be selecting the appropriate software tools and techniques to process data, selecting the appropriate software tools and techniques to present information and the resources required to present information. Students will understudy the different methods of processing data and presenting the information. They will use appropriate software tools and techniques to create data solutions. **January Mock exams revision** **Mock exams**	**Unit RO13** **LO5** **Developing Technological Solutions** Students will continue to study the content for their coursework project of designing a data solution for a given scenario. This is worth 50% of their final grade. Students will cover how to create, edit, delete and process data using appropriate software tools, how to select and present information and how to iteratively review and evaluate the development of a solution. Students will continue their mock assignment. **Database and Spreadsheet development.** **Cisco Networking Academy courses, Gmetrix Microsoft office courses**	**Unit RO13** **LO2** **Developing Technological Solutions** Students will make a start on the content for their coursework project of designing a data solution for a given scenario. This is worth 50% of their final grade. Students will cover how to initiate projects, analyse requirements, how to minimise risks in the planning process and how to undergo iterative testing. Students will undergo a mock assignment. **RO12 End of year exam revision** **Cisco Networking Academy courses, Gmetrix Microsoft office courses**	**Unit RO13** **LO7** **Developing Technological Solutions** Students will continue the content for their coursework project of designing a data solution for a given scenario. This is worth 50% of their final grade. Students will cover how to create, edit, delete and process data using appropriate software tools, how to select and present information and how to iteratively review and evaluate the development of a solution. Students will continue their mock assignment **Cisco Networking Academy courses, Gmetrix Microsoft office courses**

Year 11 Information technologies (OCR Nationals) curriculum map					
Half Term 1	**Half Term 2**	**Half Term 3**	**Half Term 4**	**Half Term 5**	**Half Term 6**
<u>Unit RO13</u> **LO7 Developing Technological Solutions** Students will continue studying the content for their coursework project of designing a data solution for a given scenario. This is worth 50% of their final grade. Students will cover how to create, edit, delete and process data using appropriate software tools, how to select and present information and how to iteratively review and evaluate the development of a solution. Students will continue their mock assignment.	**<u>Unit RO13</u>** **Understanding tools, techniques, methods and processes for technological solutions** November Mock exam revision RO13 Exam practice	**<u>Unit RO13</u>** **Understanding tools, techniques, methods and processes for technological solutions** **<u>Unit RO13</u>** Students will begin their R013 assignment proper (assignment released from the exam board in December 2021) and will put together their coursework project of designing a data solution for a given scenario. This is worth 50% of their final grade.	**<u>Unit RO13</u>** **Understanding tools, techniques, methods and processes for technological solutions** **<u>Unit RO13</u>** Marking of the final version of their data solution coursework project and marks submission. This is worth 50% of their final grade. **R012 Exam revision**	**<u>Unit R012</u>** **Understanding tools, techniques, methods and processes for technological solutions** **<u>Unit RO13</u>** **R012 Exam revision and Final exam**	

Year 10 Information technologies (OCR Nationals J836) curriculum map

Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Unit R050 **TA1 - Design tools** **1.1 Types of design tools.** Creating original design documents using the design tools, assess suitability of documents produced **TA2: Human Computer Interface (HCI) in everyday life** 2.1 The purpose, use of HCI in application areas 2.2 Hardware considerations **Unit R060** **TA 1 : Planning and designing the spreadsheet solution** 1.1 Design tools **Topic Area 2: Creating the spreadsheet solution** 2.1 Use spreadsheet tools and techniques to create the solution 2.1.1 Data handling and manipulation	**Unit R050** **TA2: Human Computer Interface (HCI) in everyday life** 2.3 Software considerations 2.4 User interaction methods **TA3: Data and testing** 3.1 Information and data 3.2 Data use 3.2.2 The difference between validation and verification **Unit R060** **TA2: Creating the spreadsheet solution** 2.1.2 Techniques to generate the outputs 2.1.3 User interface **Unit R070** **TA1: Augmented Reality (AR)** 1.1 Purpose and uses of Augmented Reality (AR) 1.2 Types of Augmented Reality (AR) and user interaction **Topic Area 3: Creating an Augmented Reality (AR) model prototype** 3.1 Augmented Reality (AR) model prototype 3.2 Triggers	**Unit R050** **TA3: Data and testing** 3.2.3 Data validation tools 3.2.4 Data verification tools 3.3 Data collection methods 3.4 Storage of collected data 3.5 Application of testing to a range of contexts **Unit R060** **1.2 Human Computer Interface (HCI) design conventions and principles** Understand Functionality. Types of outputs that clearly present information for an organisation and HCI **Unit R070** 1.3 Devices used with Augmented Reality (AR) 2.1 Planning and design considerations **Topic Area 3: Creating an Augmented Reality (AR) model prototype** 3.3 Layers / user interaction 3.4 information output	**Unit R050** **Topic Area 4: Cyber-security and legislation** 4.1 Threats 4.2 The impacts of a cyber-security attack on individuals and/or organisations 4.3 Prevention Measures 4.4 Legislation related to the use of IT systems **Unit R060** **TA 3: Testing the spreadsheet solution** 3.1 Test the user interface and the technical aspects of the spreadsheet solution **Unit R070** **TA4: Testing and reviewing** 4.1 Testing 4.2 Reviewing the process of creating the Augmented Reality (AR) model prototype	**Unit R050** **TA5: Digital communications Teaching communications** 5.1 Types 5.2 Software 5.3 Digital devices 5.4 Distribution channels **Unit R060** **TA4: Evaluating the spreadsheet solution** 4.1 Methods used to evaluate the success of the spreadsheet solution **Unit R070** Augmented Reality skills development	**Unit R050** **TA6: Internet of Everything (IoE)** 6.1 Use of IoE 6.2 Application areas in everyday life **R050 End of year mock revision and exam** **Unit R060** Spreadsheet skills development Mock project **Unit R070** Augmented Reality skills development Mock project

Year 11 Information technologies (OCR Nationals J836) curriculum map					
Half Term 1	**Half Term 2**	**Half Term 3**	**Half Term 4**	**Half Term 5**	**Half Term 6**
Unit R050 Topics revision **Unit R060** Unit R060: Data manipulation using spreadsheets NEA practice **Unit R070** Unit R070: Using Augmented Reality to present information NEA practice	**Unit R050** November mock exam revision Mock exam **Unit R060** Unit R060: Data manipulation using spreadsheets NEA practice **Unit R070** Unit R070: Using Augmented Reality to present information NEA practice	**Unit R050** Topics revision **Unit R060** Unit R060: Data manipulation using spreadsheets NEA exam **Unit R070** Unit R070: Using Augmented Reality to present information NEA exam	**Unit R050** March mock exam revision March Mock exam **Unit R060** Unit R060: Data manipulation using spreadsheets NEA exam **Unit R070** Unit R070: Using Augmented Reality to present information NEA exam	**Unit R050** **Final exam revision and exam** **Unit R060** Unit R060: Data manipulation using spreadsheets NEA submission **Unit R070** Unit R070: Using Augmented Reality to present information NEA submission	**Unit R050** **Final exam** **Unit R060** **Unit R070**

Impact: To ensure that all students make significant progress, through continual formative and summative assessments. The assessments will feed into the tracker and teaching and interventions will be affected accordingly to enhance knowledge and understanding. Progress is tracked through central records and classroom teachers will adapt their teaching accordingly.

Pupil engagement in homework, end of topic tests and intervention is also closely monitored with parents/guardians kept up to date through regular contact. Through the curriculum, we aim to develop in our students' an appreciation of computing, IT and cybersecurity and a sense of enjoyment and curiosity for the subject. The success of this will be monitored at the end of Year 11, Year 13 with the external exams and internal assessments in IT. On successful completion of these studies at KS5, hope to have developed confident students who will be able to partake relevant apprenticeships or university.