Curriculum Overview -

Computing and ICT

Introduction

This document **outlines the curriculum and key considerations** including:

- Aims and purpose
- Alignment with the whole school provision and curriculum intent
- A summary programme of study which includes sequencing of taught content

We use the National Curriculum as our statutory foundation and broadly share its principles and aims including:

- 'To provide students with an introduction to the essential knowledge that they need to be educated citizens. To introduce students to the best that has been thought and said; and help engender an appreciation of human creativity and achievement'.
- To prepare students to be confident in themselves, to have a fulfilled and successful life beyond our school – one where they contribute positively to society.
- Our statutory curriculum is just one element in the education of every child. There is time and space in the school day and in each week, term and year to range beyond statutory specifications.
- Provision of a framework of core knowledge around which teachers can develop exciting and stimulating lessons to promote the development of students' knowledge, understanding and skills as part of the wider school curriculum.
- The wider school curriculum includes an extensive range of opportunities and activities that are routinely available to students, are inclusive and reflect our diverse community.

Numeracy and literacy

Teachers should take opportunities to develop students' mathematical fluency, spoken language, reading, writing and vocabulary within their specific discipline and in line with the expectations laid out in our school curriculum statement.

Purpose of study

A high-quality computing education equips students to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which 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.' Adapted from National Curriculum, DfE, 2014.

Wolfreton Curriculum Intent

Our Computing and ICT curriculum is underpinned by our Intent statement:

Understanding the digital world through creativity and coding – a 'bit' at a time!

Curriculum Aims

To inspire future generations of creative coders and users in order to be confident, safe and thrive in a global digital economy.

The Wolfreton curriculum for computing and ICT aims to ensure that all students:

- promote the safe use of computers and develop lifelong computer skills.
- can understand and apply the fundamental principles and concepts of computer science, including logic, algorithms and data representation
- can 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
- are responsible, competent, confident and creative users of information and communication technology.

Building on prior learning

By the end of Key Stage 2, students should have been taught to:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs, work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration
- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information

- use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

What are the knowledge and skills gaps?

Generally, students from feeder primary schools are familiar with using some programmes from Microsoft Office, particularly Word and PowerPoint. Typically keyboard skills increasingly becoming a weakness due to use smart devices with touchscreens – this leads to some students lacking facility with keyboards and basic computer skills. Although the primary curriculum covers coding, this is not always taught consistently across all schools due to limitations on resources in some feeder primary schools, so some students do not have an awareness or knowledge of basic coding concepts and skills.

Curriculum Structure

Disciplinary Knowledge Strands	Year 7	Year 8	Year 9	Year 10	Year 11
E Safety	• Digital footprints • Online behaviours • Signs of danger • Reporting abuse • Gaming addiction	• Personal data security - phishing • Inappropriate behaviours • SMART rules • Overuse of technology • Password security	• Social Engineering • Sensitive information • Permanency • Social media • Legislation • Dangers of sexting • Networks HTML and Cyber Security	• Malware and Antimalware • Hackers / Tools to Stop and Best Defence • Social Engineering (Phishing, baiting, pretexting) • Encryption and keeping data safe	
Creation and Programming	• Multimedia Unit • Python EduBlocks	• Python Programming in EduBlocks • Mobile App Development	• EasyGUI Programming • Networks HTML and Cyber Security	• Intro to Programming - Hello World and Print • Assigning values to variables and Data Types • Input integers and debugging	• Turtle – Introduction Pens and Lines • Turtle – Movement and Coordinates • Turtle – Pen colour and filling shapes • File Reading • File Writing

				• Input Processing Output Selection • For Loops • Selection IF THEN ELIF • Procedures • Functions • Arrays	• CSV Files • Two Dimensional Arrays
Algorithmic Thinking	• Multimedia Unit • Python EduBlocks	• Mobile App Development	• EasyGUI Programming	• Flowcharts	• Flowcharts
Problem Solving	• Python EduBlocks	• Mobile App Development	• EasyGUI Programming	• Flowcharts	• Flowcharts
Computing Fundamentals	• Introduction to Computing	• Binary Logic • Understanding Computers	• Data and Algorithms • Networks HTML and Cyber Security	• Binary / Addition • Two's Complement • Logical and Arithmetic Shifts • Hexadecimal • ASCII • Stored Program concept • FDE • Secondary Storage • Sizes • Operating Systems • File Management • Process Management • Peripherals • Utility Software • Encryption • Robust Software • Networking (LANS WANS) • Wired v Wireless • Connectivity	• Embedded Systems • The Internet of Things • Packet Switching • OSI Layer Model • Network Protocols • Environmental Issues • Translators / Compilers • High- and Low-Level Languages • Intellectual Property • Representation of data (Images, sound, etc..) • Linear Search • Bubble Sort • Binary Search • Merge Sort • Two Dimensional Arrays

				• Topologies	

Curriculum Sequencing

Key Stage 3: Year 7 – Long Term Planning

	Autumn term	Spring term	Summer term
Knowledge	<u>E-Safety</u> • Learn about issues surrounding internet safety and online dangers. They will learn the common issues and how to avoid them. They will learn how to use the internet safely and give advice. • Know how to communicate in a respectful manner as not to cause harm to others. • Know the steps that need to be taken in order to stay safe. • Know the SMART rules. • Know how to report abuse. • Be able to recall a range of tools in order to assist them in staying safe such as thinkuknow.co.uk. 0800 1111 (Childline) and the SMART Rules <u>Introduction to Computing</u> • Be able to recall the office address. • Know what office online is and how to access it. • Know what Microsoft Teams is and what it is used for. • Know what Outlook and Word and what they are used for.	<u>Multimedia Product</u> • Understand the good and bad principles when designing a digital product. • Know how to break a problem down- Understand the terms purpose and audience and how they impact on a design. • Be able to recognise the flowchart symbols - Know that a program / algorithm is a list of instructions. • Know how to use a digital Presentation editor and the different functions thereof. • Know the key skills to evaluate. <u>Python Edublocks</u> • Learn to use the range of available tools to create simple to more complex shapes. • Synthesise mathematical problems with procedural instructions to create shapes. I.e. square, rectangle, triangle, hexagon and so on. • Be able to use the programming language to create them independently. • Use of additional tools to make programs more efficient will be introduced e.g. FOR looping.	<u>Graphics Editing</u> • Gain an understanding of how industry uses graphics to: • a. Advertise b. Promote c. Persuade • Become aware of how to effectively use a range of tools to create a new digital product, calling on creative skills. • Learn about the purpose and audience of a graphic. They will learn about the IT tools used to develop a digital artefact.

	• Know what and e-mail is and its properties such as subject, cc, bcc etc.. • Know what an internet browser is and be able to identify one.	• Students can effectively use the IDE tools, e.g. debug information, to make informed decisions about how to bug fix their programs.	
Skills	<u>E-Safety</u> • Be able to recognise danger and when they are being manipulated for the benefit of others. • Be able to state what is the best recourse of action for a dangerous situation and how internet safety relates in this situation. • Understand 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 • Be able to report concerns • Be able to use tools to set privacy levels to an appropriate level in order to protect their data online. • Be able to reflect on a situation and give advice to others on how to stay safe. <u>Introduction to Computing</u> • How to log onto Wolfreton School Systems • How to use Microsoft Teams in the browser • How to use Microsoft OneDrive in the browser • How to use Microsoft Outlook in the browser • How to use Microsoft Word in the browser • Basic understanding of how to navigate the GUI and load some apps. • Construct a simple e-mail including an attachment. • Perform simple file management in OneDrive such as creating folders and moving files from Teams into OneDrive	<u>Multimedia Product</u> • Place in practice good design techniques such as house style and positioning of objects • Recognise the purpose and audience of a given brief and be able to describe how it impacts a design. • Be able to decompose a problem with regards to a given brief • Be able to create / use Flowchart. • Be able to create / use a Presentation Editor to create a multimedia product. • Use online tools via Office.com / PowerPoint including multimedia elements such as video, sound and automation. • Evaluate their own work <u>Python Edublocks</u> • Students can use a Textual Programming language and program flow to draw shapes. They will learn about structure and using correct code for a given purpose. • Use programming objects and the Turtle – using appropriate turtle commands to create shapes. They will apply basic mathematical knowledge to the computer models. • They can use 'blocks' correctly to speed up coding and the correct use of error codes to debug their programs. • They recognise that the Python code generated is that which is being executed.	<u>Graphics Editing</u> • Learn how to edit images using a graphics editing package and how to save them in the correct file format. • They will learn how to create composite images and manipulate graphics using various tools. • They will learn how to plan a poster layout and collect relevant images for the poster. • To understand how to use the tools in to create the poster for a given purpose / audience in practice. • Students are able to evaluate performance.

	• Upload documents to OneDrive. • Use the Application Launcher to load applications in the cloud.		
Subject specific vocabulary	Digital Footprint Viruses Malware Ransomware WannaCry Addiction Safeguard Username Icon Taskbar	Psychographics Algorithm Process Selection Terminator Hyperlink Sequence Iteration Loops Flow	Manipulate Asset Transparency Opacity Canvas Scale Rasterize Resolution (PPI [Pixels Per Inch] and DPI [Dots Per Inch])
Assessment	Teachers will check the worksheet produced in class. Students to undertake an online assessment On screen assessment including multiple choice	Undertake an interim assessment. have the final product graded. Undertake an interim assessment. complete a practical programming assessment	Students are assessed on their final product.

Key Stage 3: Year 8 – Long Term Planning

	Autumn term	Spring term	Summer term
Knowledge	<u>E-Safety</u> • Student will learn about posting the correct amount of information online • Learn about what information should be posted online and which information should not • Learn about grooming and meeting strangers online • Learn about sharing nude images and its consequences • Learn about how to report concerns about adults online • Learn about distribution of inappropriate material • Learn about a digital footprint and how it is linked to security	<u>Python Programming in EduBlocks</u> • Learn how to output data to the screen and what a variable is • Learn why order is important and how to input numbers into Python • Learn about different data types in Python such as bool, integer, string etc.. • Learn the input function • Learn how to convert an integer into a string and the other way round • Learn what is selection and how it works in Python • Learn what is indentation and how it relates to if statements	<u>Understanding Computers</u> • Learn about the hardware that makes up a computer • Know what is meant by the terms hardware and software • Learn what is an input, output and storage device are • Learn how a CPU works • Understand the difference between RAM and ROM • Learn the purpose of the CPU and things that impact on performance • Learn about the components of the CPU such as ALU, CU and so on • Learn about the FDE cycle

	• Learn about some social engineering techniques <u>Binary Logic</u> • Know how a simple circuit will work • Know why computers use binary • Know the rules for the three logic gates: AND OR NOT • Know the truth tables for the three logic gates AND OR NOT • Know what the binary value of true and false is • Know what a logic circuit expression or equation is • Know the output from one logic gate can feed into another as input	• Learn about iteration or looping and how it works in Python • Learn about the three different loops • Learn about operators	• Learn about operating systems, application and utility software • Learn about binary • Learn about ASCII • Learn about data sizes • Learn the rules of binary addition • Learn what an overflow error is • Learn how data is stored on a computer • Learn about optical storage • Learn about how computers store images and represent them • Learn about resolution, colour depth, vector and bitmap images <u>Mobile App Development</u> • Learn how to use an app to solve a problem • Learn how to make an app react to user input • Learn how to add images to a GUI • Learn about variables and how to manipulate them
Skills	<u>E-Safety</u> • Be able to recognise when they are posting too much information • Be able to identify what is appropriate and inappropriate information to post online • Be able to report concerns • Be able to recognise if they are being groomed or manipulated • Recognise social engineering tactics. • Be able to safeguard themselves from social engineering techniques <u>Binary Logic</u> • Be able to recognise the three logic gate symbols	<u>Python Programming in EduBlocks</u> • Be able to create a simple program in Python that uses the terminal or command window • Be able to assign a value to a variable • Be able to output information to the screen • Be able to order a simple program in Python • Be able to input numbers into Python • Be able to use that input in calculations • Be able to describe data types in Python • Be able to describe what is meant by selection • Be able to use an IF statement in Python • Be able to use indentation • Be able to use selection in Python programs	<u>Understanding Computers</u> • Be able to explain the different parts of the CPU • Be able to explain the FDE cycle • Be able to define Hz, MHz and GHz and state how these relate to the speed of the processor • Be able to explain different aspects of utilities, operating systems and applications software • Be able to convert denary values into 8-bit binary • Be able to convert 8-bit binary values into denary numbers

	• Be able to create the three truth tables for AND OR NOT logic circuits • Be able to create truth tables based on real life situations • Be able to work out the output of a simple circuit • Be able to work out the output and a more advanced circuit • Be able to create truth tables from logic circuits • Be able to create a logic circuit given an expression		• Be able to perform binary addition using rules • Be able to evaluate overflow errors • Be able to explain how 1s and 0s are represented by lands and pits • Be able to evaluate the strengths and weaknesses of different storage devices • Be able to explain what a pixel is and how images can become pixelated • Be able to decode a binary string into an image • Be able to explain the terms resolution, bitmap, vector and colour depth. • Be able to encode a binary image <u>Mobile App Development</u> • Be able to break down a problem • Be able to implement a GUI to meet the needs of a user • Be able to link screens together • Recognise that events can control the flow of a program • Use a block-based programming language to create a sequence • Use user input in an event-driven programming environment • Be able to add an image from an existing file • Be able to resize the image in the properties and in code • Be able to code the image to respond to the tap & move • Understand the role of a variable • Add or subtract from a variable in an event • Show the result of a variable on screen

Subject specific vocabulary	• Uniqueness • Randomness • Phishing • Shouldering • Exploitation • Fraudulent • Boolean • Operators • Binary • Denary	• Operators • Variable • Sequence • Encapsulation • Python • Boolean • Recursion	• Peripheral • Components • Volatile • Scalable • Pixilation • Decomposition • Hexadecimal • Simulator • Developer
Assessment	**E-Safety** Teachers will check the worksheet produced in class. Students to undertake an online assessment On screen assessment including multiple choice **Binary Logic** Teachers will check the worksheet produced in class. Students to undertake an online assessment On screen assessment to create truth tables etc by typing in the answers	**Python Programming in EduBlocks** Teachers will check the worksheet produced in class. Interim Assessment – Multiple Choice End of Unit – Students produce 3 python programs.	**Understanding Computers** Interim Assessment – Multiple Choice End of Unit – Type answers in Binary Review Binary Addition Review **Mobile App Development** Produce a mobile app (Tappy Tap)

Key Stage 3: Year 9 – Long Term Planning

	Autumn term	Spring term	Summer term
Knowledge	<u>E-Safety</u> • Learn about oversharing information • Learn that your digital footprint is also based upon what others also share about you • Learn that your digital footprint can be pieced together • Learn about private information that should not be shared	<u>Data and Algorithms</u> • Learn how computers store numbers • Learn about sizes of data • Learn how computers store images • Learn about abstraction • Learn what a digital image is • Learn how can binary be used to store image data • Learn the process to encode and decode a digital image	<u>Networks HTML and Cyber Security</u> • Learn about the WWW and the Internet • Understand the breakdown of a URL • Learn about the most common form of cyber attacks • Be able to define hacking in the context of cybersecurity • Explain what ethical hacking is? • Identifying different types of cyberattack

	• Learn about online risks such as cat fishing, identity fraud and so on • Learn about nudes and pornography and the legality of under 18s sharing such material • Learn about how bad decisions can have an effect on their future <u>EasyGUI Programming</u> • Learn about sequencing and event handling • Learn about procedures in Python • Learn about GUI output techniques • Learn what a GUI is • Learn about variables in Python • Learn about input methods using GUI techniques • Learn about selection in Python • Learn about ButtonBoxes in Python • Learn to code an app using a range of different terminal and GUI based techniques	• Learn about how computers store sound • Learn what sound is • Learn how computers transmit sound • Learn about the link between file size and fidelity • Learn about file size calculation in relation to sound • Learn about the properties of sound files ie: stereo, mono etc.. • Learn how the bit depth and sample rate can affect the quality of the audio file • Learn how computers search for data • Learn how computers sort data	• Explain how a DDoS attack can impact users of online services • Identify strategies to reduce the chance of a brute force attack being successful • Explain the need for the Computer Misuse Act • Learn programming aspects of HTML
Skills	• Recognise the fact that they are over sharing • Recognise online risks such as cat fishing and identity fraud • Report concerns and know the mechanisms of such <u>EasyGUI Programming</u> • Understand the role of a flow diagram • Use a flow diagram to show stages of an algorithm • Create an algorithm using Flowol • Import a GUI library • Use a GUI to output to the screen • Use a simple procedure	<u>Data and Algorithms</u> • Convert a binary number into a denary number • Convert a denary number up to 255 into a binary value • Decode and encode a digital image • Calculate the file sizes of computer-based images • Explain how a computer converts analogue sound into digital and vice versa • Explain why digital media is likely to be lower quality than analogue media • Explain the reasons that may affect the quality of sound when digitizing it	<u>Networks HTML and Cyber Security</u> • Explain the differences between the WWW and internet • Evaluate a website • Recognise how to spot a fake URL • Understand the basic role and structure of HTML • Understand how tags work • Create a web page • Add links to a website • Add images to a website

	• Use variables in Python • Use input functions from GUI libraries • Write programs that use selection in Python • Write programs that allow the user to selection options from a GUI based menu • Use procedures • Use global variables • Use msgbox to output to the screen • Use enterbox to enter data • Use buttonboxes to create a simple menu system • Create a sequence of instructions in the appropriate order	• Calculate the file sizes and digitized sounds / music • Define algorithm • Understand and explain how binary and linear search algorithms work • Compare and contrast linear and binary search algorithms • Perform a linear search • Perform a binary search • Explain why we need to sort data • Describe and implement at least one sorting algorithms	
Subject specific vocabulary	• Permanency • Pseudonym • Allegations • Precautions • Char • Terminator • Procedures • Buttonbox • Array • Looping • Iteration • Concatenation	• Binary • Denary • Transistors • States • Represent • Register • Encode • Abstraction • Digitize • Fidelity • Transmit • Efficiency	• Network • Espionage • Botnet • Malware • Phishing • Pharming • Shouldering • Trojan • Ransomware Keyframing • Storyboarding
Assessment	E-Safety Teachers will check the worksheet produced in class. On screen assessment including multiple choice EasyGUI Python Programming Interim Assessment – Multiple Choice End of Unit Test – Project based assessment where the student creates a GUI based program for a bank	Data and Algorithms Teachers will check the worksheet produced in class. On screen assessment including multiple choice End of Unit Test Interim Test	Networks HTML and Cyber Security Students to produce a simple website on cyber security (Project Based Assessment)

Key Stage 4 Year 10 – Long Term Planning – Edexcel GCSE

	Autumn term	Spring term	Summer term
Knowledge	01P – Representation of Numbers in Binary • Binary to Denary Conversion using 8-bit unsigned binary numbers • Rules of binary addition • Overflow errors 02P – Binary division/multiplication, representation of letters and hexadecimal • Representation of negative numbers in binary using sign and magnitude and two's compliment • Logical Binary Shifts • Arithmetic Binary Shifts • Hexadecimal • ASCII 01CT – Introduction to Computer Programming • Intro to Programming - Hello World and Print • Decomposition and Sequencing • Assigning values to variables and Data • Types • Input integers and debugging • Flowcharts <u>03P – Stored program concept (Von Neumann) and how computers work</u> • Stored Program Concept (Von Neumann) • Fetch Decode Execute Von Neumann • CPU Terminology • Secondary Storage Sizes	02CT – Programming Fundamentals • Input Processing Output Selection • For Loops • Selection IF THEN ELIF 04P - Operating Systems, their components and functionality • Operating Systems • File Management • Process Management (Round Robi • Peripherals and User Managemen • Utility Software	05P – Viruses, security and social engineering • Malware and AntiMalware • Hackers / Tools to Stop and Best Defence • Social Engineering (Phishing, baiting, pretexting etc..) • Encryption and keeping data safe • Robust software, vulnerabilities, bad practice and code reviews 03CT – Making computer programs modular and arrays • Procedures • Functions • Arrays 06P Networks • LANS and WANS • Network Speed • Connectivity / Cables (UTP, Fibre, Ethernet etc…) • Wired V Wireless • Network Topologies (Ring, Star, Mesh)
Skills	<u>01P - Representation of Numbers in Binary</u> • Convert from denary to binary numbers and vice versa	<u>02CT – Programming Fundamentals</u> • Use print and input functions	<u>05P – Viruses, security and social engineering</u> • Describe and explain the different types of

	• Add 8-bit binary numbers • Be able to handle overflow errors <u>02P - Binary division / multiplication, representation of letters and hexadecimal</u> • Convert signed and unsigned 8-bit binary numbers • Perform logical binary shifts to show multiplication and division • Perform arithmetic binary shifts to show multiplication and division • Convert binary and denary values into hexadecimal notation and vice versa • Convert ASCII codes into letters and vice versa <u>03P – Stored program concept (Von Neumann) and how computers work</u> • Describe the Von Neumann architecture and how computers work • Explain the FDE cycle, how this relates to Von Neumann and the stages of fetch data and instructions stored in RAM • Identify and explain the components of a computer system • Describe the roles of computer parts in a computer system • Explain the components of the CPU and their roles • Describe and explain secondary storage devices and their roles • Calculate and or state various sizes of secondary storage	• Recognise selection and use simple if statements to get the computer to make decisions • Expand the capability of the if statements to include if then else complexity • Recognise loops and iteration • Use 'for loops' • Use 'while loops' <u>04P – Operating Systems</u> • Describe and explain what an operating system is • Explain file management and its related functions such as directories, files, moving copying etc. • Explain file permissions read, write and execute • Explain the term process management • Explain the main scheduling algorithms round robin etc.. • Explain what virtual memory is and how it works • Explain about peripherals, device drivers and evaluate why they are needed • Explain the different types of interfaces such as GUI, WIMMP, CLI • Describe and explain the different types of utilities software and their roles in the system • Explain what is meant by robust software, code vulnerabilities and hackers • Identify and explain aspects of a code review.	Malware and Antimalware • Describe and explain the different types of Hackers / Tools and Best Defence against them • Explain Social Engineering (Phishing, baiting, pretexting etc..) • Explain what encryption is and how to keep data safe • Discuss robust software, vulnerabilities, bad practice and code reviews 06P - Networks • Describe the different types of network topology be able to discuss the different network transmission and be able to perform calculations • Explain the different type of network connectivity media such as UTP and fibre optic • Be able to talk about wired and wireless networks and evaluate them • Explain different networking protocols and their role with in a network • Discuss how data is broken up • Discuss the TCP/IP stack / OSI model
Vocabulary	Please see KS4 Computing vocabulary and definitions	Please see KS4 Computing vocabulary and definitions	Please see KS4 Computing vocabulary and definitions
Assessment	01P Representation of Numbers in Binary	02CT – Programming Fundamentals	05P – Viruses, security and social engineering

	Type in answers KMP 02P - Binary division / multiplication, representation of letters and hexadecimal Type in answers 01CT – Introduction to Computer Programming 03P – Stored program concept (Von Neumann) and how computers work Onscreen based KMP	On Screen Assessment / KMP 04P - Operating Systems, their components and functionality On Screen Assessment / KMP	On Screen Assessment / KMP 03CT – Making computer programs modular and arrays On Screen Assessment / KMP Coding 06P Networks On Screen Assessment / KMP

Key Stage 4: Year 11 – Long Term Planning – Edexcel GCSE

	Autumn term	Spring term	Summer term
Knowledge	01CT – Using the turtle to control and create computer graphics • Turtle Introduction Pens and Lines • Turtle Movement and Coordinates • Turtle pen colour and filling 01P – Embedded Systems. IoT and Networking • Embedded Systems • The Internet of Things • Packet Switching (Networks) • TCP IP and the OSI 4 Layer Model • Protocols (HTTP, FTP, Ethernet, POP etc…) 02P – Environmental Issues, Low and HighLevel Programming and intellectual	02CT – Using coding techniques to handle files in Python • File Reading including the three different operating modes (read, readline and readlines) • File Writing • CSV Files 03P – Representation of Data and Compression Learn how the computer represents different kinds of data and stores it. • Bitmaps • Sound • Compression • Lossy Compression	03CT – Searching and sorting techniques in Python Learn how a computer sorts and searches for data. learn: • Linear Search • Bubble Sort • Binary Search • Merge Sort • Two Dimensional Arrays

	Property • Environmental Issues and the Wee Directive • High Level and Low-Level Languages • Translators • Intellectual Property	• Lossless Compression	
Skills	01CT – Using the turtle to control and create computer graphics • Manipulate the turtle to draw polygons and basic shapes • Functions and built-in libraries to control movement and use coordinates • Format the turtle to change attributes such as width, colour, size and filling options 01P – Embedded Systems. IoT and Networking • Describe and explain the properties of an embedded system and IoT • Give examples of embedded systems and IoT • Explain what is meant by a packet switching network and how it works • Explain the 4 stages of the OSI layer model and what happens in each layer • List all of the layers in order • List networking protocols • Explain how those networking protocols work 02P – Environmental Issues, Low and High Level Programming and intellectual Property • Describe and explain environmental issues and their associated impact. EG:	02CT – Using coding techniques to handle files in Python • Open a text file for reading • use three different modes for opening a text file • Create a program to read a text file and display the output on screen • Open a text file for writing • Use three different modes for opening a text file for writing • Create a program to write data to a text file and display the output on screen • Read data from a CSV file and display the data on screen • Write data to a CSV file • Explain how the CSV parameters work in Python 03P – Representation of Data and Compression • Describe and explain how a computer represents images • Encode a digital image • Decode a digital image • Describe and explain how a computer represents sound • Evaluate the effect of altering the resolution, amplitude, channels, frequency, sample rate and bit depth	03CT – Searching and sorting techniques in Python • Implement a linear search in Python • Implement a two-dimensional array • Explain how a bubble sort works • Explain how a binary search works • Explain how a merge search works

	raw materials impact on the environment and water usage • Explain elements of the WEEE directive • Explain high- and low-level languages and evaluate their suitability for a given task • Explain what is meant by an interpreter, compiler and assembler when translating languages • Evaluate an interpreter, compiler and assembler and state the disadvantages and advantages • Describe and explain aspects of IPO and copyright • Contextualise the use of IPO and copyright		
Vocabulary	Please see KS4 Computing vocabulary and definitions	Please see KS4 Computing vocabulary and definitions	Please see KS4 Computing vocabulary and definitions
Assessment	01CT – Using the turtle to control and create computer graphics Coding KMP on screen assessment 01P – Embedded Systems. IoT and Networking On screen KMP assessment 02P – Environmental Issues, Low and High Level Programming and intellectual Property On screen KMP assessment	02CT – Using coding techniques to handle files in Python On screen KMP assessment	03CT – Searching and sorting techniques in Python Coding on Screen On screen KMP assessment

	Autumn term	Spring term	Summer term
Knowledge	**Unit R094 – NEA Knowledge - Visual identity and digital graphics** **Visual Identity Basics** • Purpose of visual identity • Component features (name, logo, slogan) • Elements (graphics, typography, colour palette, layout) • Influence of brand values and positioning on design **Graphic Design Principles** • Layout conventions for different products • Typography • Colour theory and systems • Use of white space and composition for clarity and impact **Technical Properties and Assets** • Bitmap vs Vector graphics • Image properties • File formats (lossy vs lossless) • Licensing and permissions for assets **Planning Techniques** • Mood boards and mind maps for idea generation • Concept sketches and visualisation diagrams for layout • Asset tables for recording sources and permissions **Creation and Editing** • Tools and techniques in image editing software: • Preparing and storing assets for use in graphics	**NEA - Visual identity and digital graphics** **Visual Identity Basics** • Purpose of visual identity • Component features (name, logo, slogan) • Elements (graphics, typography, colour palette, layout) • Influence of brand values and positioning on design **Graphic Design Principles** • Layout conventions for different products • Typography • Colour theory and systems • Use of white space and composition for clarity and impact **Technical Properties and Assets** • Bitmap vs Vector graphics • Image properties • File formats (lossy vs lossless) • Licensing and permissions for assets **Planning Techniques** • Mood boards and mind maps for idea generation • Concept sketches and visualisation diagrams for layout • Asset tables for recording sources and permissions **Creation and Editing** • Tools and techniques in image editing software: • Preparing and storing assets for use in graphics • Saving/exporting in proprietary and client-ready formats	**Unit R093 Exam topic – Creative iMedia in the media industry** **Media Industry Basics** • Sectors of the media industry • Types of media products **Job Roles** • Creative roles. • Technical roles. • Senior roles: campaign manager, creative director, production manager • Responsibilities and phases (pre-production, production, post-production) **Factors Influencing Product Design** • Purpose: advertise, educate, entertain, inform, influence • Client requirements: product type, purpose, audience, style, timescales • Audience segmentation: age, gender, income, interests, lifestyle • Research methods: primary and secondary • Media codes: technical, symbolic, written.

	• Saving/exporting in proprietary and client-ready formats Review and Evaluation • Reviewing fitness for purpose • Recommendations for improvement and further development	Review and Evaluation • Reviewing fitness for purpose • Recommendations for improvement and further development	
Skills	Develop Visual Identity • Create a logo using design principles • Combine typography, colour palette, and graphics to form a cohesive visual identity • Apply brand values and positioning to influence design choices • Ensure visual identity is suitable for client and target audience Plan Digital Graphics • Produce mood boards and mind maps to generate ideas • Create concept sketches and visualisation diagrams for layout planning • Prepare asset tables with details of sources and permissions • Apply layout conventions for different products (e.g., posters, web graphics, packaging) Technical Properties and Asset Preparation • Select appropriate file formats (JPEG, PNG, SVG, PSD) for different uses • Adjust image properties (resolution, DPI/PPI, colour depth) for print and digital media • Prepare bitmap and vector assets for compatibility and scalability • Organise and store assets in structured folders for project use	Develop Visual Identity • Create a logo using design principles • Combine typography, colour palette, and graphics to form a cohesive visual identity • Apply brand values and positioning to influence design choices • Ensure visual identity is suitable for client and target audience Plan Digital Graphics • Produce mood boards and mind maps to generate ideas • Create concept sketches and visualisation diagrams for layout planning • Prepare asset tables with details of sources and permissions • Apply layout conventions for different products (e.g., posters, web graphics, packaging) Technical Properties and Asset Preparation • Select appropriate file formats (JPEG, PNG, SVG, PSD) for different uses • Adjust image properties (resolution, DPI/PPI, colour depth) for print and digital media • Prepare bitmap and vector assets for compatibility and scalability • Organise and store assets in structured folders for project use	Media Industry Basics • Identify different media sectors (traditional and new media). • Classify media products by type (video, audio, animation, graphics, games). • Explain how sectors and products are evolving and interrelated. Job Roles • Describe responsibilities of creative, technical, and senior roles. • Identify which roles apply to pre-production, production, and post-production phases. • Explain why individuals may perform multiple roles in smaller projects. Factors Influencing Product Design • Interpret client briefs and extract key requirements. • Explain how purpose affects style, content, and layout. • Analyse audience segmentation and its impact on design decisions. • Compare primary and secondary research methods and apply them to scenarios. • Explain how media codes (technical, symbolic, written) create meaning and engagement.

	Create Visual Identity and Digital Graphics • Use image editing software tools effectively: o Layers and layer styles o Selections and cropping o Filters and effects o Typography tools • Edit and repurpose assets to meet technical and design requirements • Save and export graphics in proprietary and client-ready formats **Review and Evaluate** • Check technical properties of visual identity and graphics (resolution, file format, compatibility) • Assess fitness for purpose against client brief and target audience needs • Recommend improvements and further development opportunities.	**Create Visual Identity and Digital Graphics** • Use image editing software tools effectively: o Layers and layer styles o Selections and cropping o Filters and effects o Typography tools • Edit and repurpose assets to meet technical and design requirements • Save and export graphics in proprietary and client-ready formats **Review and Evaluate** • Check technical properties of visual identity and graphics (resolution, file format, compatibility) • Assess fitness for purpose against client brief and target audience needs • Recommend improvements and further development opportunities.	
Vocabulary	Please see KS4 Creative iMedia vocabulary and definitions	Please see KS4 Creative iMedia vocabulary and definitions	Please see KS4 Creative iMedia vocabulary and definitions
Assessment	Back to the Future KMP • Create poster following design guidelines for a Back to the Future movie. Product Creation KMP • Extended project creating a product • Detailed analysis required as preparation for CRW Colour Theory KMP • On screen test. Suitable for RO94, RO97 and RO93. Photoshop KMP • On screen test. Suitable for RO94 and RO93.	R094 Coursework	Interim KMP • Done part way through topic as part of assessment. Pack A Assessment • Done in place of mock exam as one section has been covered.

Key Stage 4: Year 11 – Long Term Planning – OCR Creative iMedia

	Autumn term	Spring term	Summer term
Knowledge	NEA Knowledge RO97 - Interactive digital media 2 session a week Interactive Media Basics • Purpose of interactive digital media • Types of products: websites, apps, kiosks, e-learning, games • Content elements: text, images, audio, video, animation • Impact of user experience (UX) and user interface (UI) design Design Principles • GUI design features • Interaction styles • Features: alt text, captions, colour contrast, resizable text • Navigation conventions Technical Properties and Assets • Image formats: bitmap vs vector • Audio and video formats • File properties • Licensing and permissions for assets Planning Techniques • Wireframes and storyboards for interface design • Navigation diagrams for user flow	NEA Practical RO97 - Interactive digital media 2 session a week Interactive Media Basics • Purpose of interactive digital media • Types of products: websites, apps, kiosks, e-learning, games • Content elements: text, images, audio, video, animation • Impact of user experience (UX) and user interface (UI) design Design Principles • GUI design features • Interaction styles • Features: alt text, captions, colour contrast, resizable text • Navigation conventions Technical Properties and Assets • Image formats: bitmap vs vector • Audio and video formats • File properties • Licensing and permissions for assets Planning Techniques • Wireframes and storyboards for interface design • Navigation diagrams for user flow	Unit R093 Exam topic 4 – Creative iMedia in the media industry Distribution Considerations Platforms • Online: websites, apps, streaming • Physical: CD/DVD, print media File Properties and Formats • Images: raster vs vector, DPI/PPI • Audio: sample rate, bit depth • Video: resolution (SD, HD, 4K), frame rate Compression Types • Lossy vs lossless and their impact on quality Revision • Topic 1-4

	• Asset tables for recording sources and technical details • Master page/template planning for consistency Creation and Editing • Tools and techniques in authoring software: • Apply house style and master pages • Prepare and repurpose assets for compatibility • Save/export in platform-independent formats Review and Evaluation • Testing functionality: navigation, interactivity, multimedia playback • Checking technical properties • Reviewing fitness for purpose against client brief and audience needs • Recommendations for improvement and further development Exam Topic 2 RO93 – Creative iMedia in the media industry Purpose of Media Products • Advertise, educate, entertain, inform, influence Client Requirements • Product type, purpose, audience, style, timescales, constraints Audience Segmentation • Age, gender, income, interests, lifestyle, location	• Asset tables for recording sources and technical details • Master page/template planning for consistency Creation and Editing • Tools and techniques in authoring software: • Apply house style and master pages • Prepare and repurpose assets for compatibility • Save/export in platform-independent formats Review and Evaluation • Testing functionality: navigation, interactivity, multimedia playback • Checking technical properties • Reviewing fitness for purpose against client brief and audience needs • Recommendations for improvement and further development Exam Topic 3 RO93 - Creative iMedia in the media industry Pre-production Planning Work Plans • Phases (pre-production, production, post-production), tasks, timescales, milestones, contingencies Planning Documents • Storyboards, scripts, wireframes, visualisation diagrams, asset logs Legal Issues	

	Research Methods • Primary: surveys, interviews, focus groups • Secondary: books, websites, magazines **Media Codes and Conventions** • Technical codes (camera angles, lighting) • Symbolic codes (colour, mise-en-scène) • Written codes (typography, captions) **Impact of Codes** • How codes convey meaning, create impact, and engage audiences	• Privacy and permissions, defamation, data protection **Intellectual Property** • Copyright, trademarks, patents, Creative Commons **Regulation and Classification** • ASA, Ofcom, BBFC, PEGI **Health and Safety** • Risk assessments, location recces, hazard identification	
Skills	**Coursework Skills RO97** **Plan Interactive Digital Media** • Create wireframes and storyboards for interface design • Produce navigation diagrams to show user flow • Prepare asset tables with details of sources, permissions, and technical properties • Apply GUI design principles • Plan master pages/templates for consistent styling **Create Interactive Digital Media** • Insert and format text, images, audio, video, and animation in authoring software	**Coursework Practical RO97** **Plan Interactive Digital Media** • Create wireframes and storyboards for interface design • Produce navigation diagrams to show user flow • Prepare asset tables with details of sources, permissions, and technical properties • Apply GUI design principles • Plan master pages/templates for consistent styling **Create Interactive Digital Media** • Insert and format text, images, audio, video, and animation in authoring software	**Media Industry Basics** • Identify different media sectors (traditional and new media). • Classify media products by type (video, audio, animation, graphics, games). • Explain how sectors and products are evolving and interrelated. **Job Roles** • Describe responsibilities of creative, technical, and senior roles. • Identify which roles apply to pre-production, production, and post-production phases. • Explain why individuals may perform multiple roles in smaller projects. **Factors Influencing Product Design**

	• Create interactive elements • Implement house style and master pages across all screens/pages • Repurpose assets • Organise and store assets in structured folders for project use • Save and export finished product in platform Test and Review Interactive Digital Media • Test navigation paths and interactive features for functionality • Check multimedia playback and performance across devices • Verify technical properties • Review product against client brief and target audience needs • Recommend improvements and suggest further development opportunities	• Create interactive elements • Implement house style and master pages across all screens/pages • Repurpose assets • Organise and store assets in structured folders for project use • Save and export finished product in platform Test and Review Interactive Digital Media • Test navigation paths and interactive features for functionality • Check multimedia playback and performance across devices • Verify technical properties • Review product against client brief and target audience needs • Recommend improvements and suggest further development opportunities	• Interpret client briefs and extract key requirements. • Explain how purpose affects style, content, and layout. • Analyse audience segmentation and its impact on design decisions. • Compare primary and secondary research methods and apply them to scenarios. • Explain how media codes (technical, symbolic, written) create meaning and engagement.
Vocabulary	Please see KS4 Creative iMedia vocabulary and definitions	Please see KS4 Creative iMedia vocabulary and definitions	Please see KS4 Creative iMedia vocabulary and definitions
Assessment	RO97 Skills assessment Topic 2 Interim Topic 3 Final	R097 Coursework Topic 3 Interim Topic 3 Final	Mock Exam Final Exam

Key Stage 5 Year 12 – Long Term Planning – AAQ in IT

	Autumn term	Spring term	Summer term
Knowledge	F160 Fundamentals of Application Development	F160 Fundamentals of Application Development	F162: Designing and communicating UX/UI solutions

	Topic Area 1: Types of software used in application design Programs and Applications • Know what a program is • Know what an application is • Know the characteristics of a program • Know the characteristics of an application • Know the function of an application • The relationship between programs and • applications • Know the different types of devices that use programs/applications Operating Systems • Know the characteristics of each type of operating system used to run application software • The advantages and disadvantages of each type of operating system • Know the types of device that use each type of operating system • How defined client requirements affect the selection of an operating system Application types • The purpose of each application type • The characteristics of each application type Application software categories • Know the characteristics of each application software category • The purpose of each application software Category • Know the types of device that use each application software category • The advantages and disadvantages of each application software category 1.3.3 Application software types • Know characteristics of each application	Topic Area 5: Human computer interface and interaction 5.3 Human computer interface design documents and diagrams • Processing and data handling • Data flow diagrams • Level 0 • Level 1 • Flowcharts • User interface designs • Visualisation diagram Topic Area 6: Job roles and skills 6.1 Job roles • Application Designer • Mobile Application Designer • Project Manager • Systems Analyst • Systems Designer • User Experience Designer (UXD) • User Interface Designer (UID) • Know the main responsibilities of each job role related to software application development 6.2 Communication skills required in application development • Appropriate language to meet the needs of the audience • Non-verbal Questioning techniques to elicit specific information • Verbal • Written • Know the characteristics of each communication skill	Designing the UX/UI solution (Related to Task 2 • Know navigation design principles • Know Schneiderman's 8 Golden Rules of interface design • Understand the importance of error handling • Know how to assess a UI design in relation to design psychology and interface standards Communicating the UX/UI solution (Related to Task 3) • Know the elements and factors of a UX/UI showcase for a client • Know and identify the techniques for effective communication to deliver the UX/UI showcase F164: Website development Creating the high-fidelity website prototype (Related to Task 2) • Know what is meant by responsive design • Know what is meant by CSS and the commands required to implement a consistent website design • Know what libraries could be used to create a website prototype

	software type • The purpose of each application software type • The advantages and disadvantages of each software application type • How defined client requirements **Topic Area 3: Planning application development projects** **Planning projects** **3.1 Planning project** • Why planning application development projects is important • The advantages and disadvantages of planning application development projects • The consequences of not planning • application development projects • The importance of each planning • consideration • How each planning consideration impacts application development **3.2 Project planning tools** • Know the components and conventions of each project planning tool • The advantages and disadvantages of each project planning tool • How defined client requirements determine/affect the selection of project • planning tools **Topic Area 2: Software development models** **2.1 Software development models** • Know the characteristics of each software development model • Know why software development models are used • The advantages and disadvantages of	**F162: Designing and communicating UX/UI solutions** **Planning the UX/UI solution (Related to Task 1)** • Know the client and user requirements for the UX/UI solution. • Know the functional and interface requirements for the UX/UI solution. • Know how the functional and non-functional requirements impact the design of the UX/UI solution. • Know appropriate UX/UI design concepts **F164: Website development** **Planning and designing the high-fidelity website prototype (Related to Task 1)** • Know client and user requirements for a website prototype • Know principles of website design and navigation • Know principles of website templates and use of house style when designing websites • Know how a website should be tested • Know what is meant by libraries and frameworks • Know what is meant by search engine optimization • Know what is meant by W3C and accessibility compliance **F162: Designing and communicating UX/UI solutions** **Designing the UX/UI solution (Related to Task 2)** • Know diagrams that show the interaction flows and navigation routes for the UX/UI solution.	

	using software development models • The diagrammatical representation of each software development model • The advantages and disadvantages of each software development model 2.2 The common phases of software development models • Know the common phases included in the software development models • Know the tasks included in each phase in software development models • How the phases interact and iterate in software development models Topic Area 4: Application design scoping 4.1 Methods of gathering client requirements • Know the purpose of each method When each method is used • Know the type of information and data that can be collected using each method • The advantages and disadvantages of using each method 4.2 Client requirement specifications • The importance of creating client requirement specifications • Know the elements of client requirement specifications • The purpose of each element 4.3 Decomposition methods • Know the purpose of each decomposition method • When it is appropriate to use each decomposition method • The advantages and disadvantages of each decomposition method Topic Area 5: Human computer interface and interaction	• Know diagrams that show the steps within processes for the UX/UI solution • Know the elements of a high-fidelity prototype • Know and understand what is meant by an audit F164: Website development Creating the high-fidelity website prototype (Related to Task 2) • Know appropriate website structures • Know how to prepare assets for prototype websites • Know what is meant by interactive and navigational components • Know what is meant by authoring software	

	5.1 Human computer interaction and devices • The purpose of each type of user interaction • The different types of user interactions • Know the type of device on which each type of interaction is used • The advantages and disadvantages of each type of interaction used with application software 5.1.2 Types of device • Know each type of device that uses application software • The characteristics of each type of device 5.2 Human computer interface visual design considerations • Colours • Interaction • Location hierarchy • Messages • Help • Error • Typography • Style • Size • Wireframe diagrams		
Skills	F160 Fundamentals of Application Development Topic Area 1: Types of software used in application design • Recognise different categories of software (programs, applications, operating systems) • Explain the purpose and characteristics of: o Network operating systems o Open-source operating systems o Proprietary operating systems	F160 Fundamentals of Application Development Topic Area 5: Human computer interface and interaction You should be able to describe, compare, and evaluate:	F162: Designing and communicating UX/UI solutions Designing the UX/UI solution (Related to Task 2) 1. UX/UI Design Skills • Designing user interfaces that meet the brief • Creating wireframes and high-fidelity mock-ups

	• Identify different application types (e.g., productivity apps, multimedia apps, communication apps)
	• Explain where and why each type is used in real-world contexts
	• Understanding open-source, closed-source, shareware, freeware, and embedded software
	• Explaining advantages and disadvantages of each model
	• Knowing when each type is appropriate for application development
	• Distinguish between:
	  o Off-the-shelf software
	  o Custom off-the-shelf (COTS)
	  o Bespoke software
	• Evaluate suitability for different business or development scenarios
	• Select appropriate software types for a given situation
	• Justify your choices using technical reasoning
	• Identify limitations or risks of different software options
	Topic Area 3: Planning application development projects
	• Produce **arrow diagrams** to show task sequences and dependencies
	• Draw and interpret **flowcharts** for processes
	• Construct **Gantt charts** to show timelines, durations, and milestones
	• Produce **PERT charts** to identify critical paths and estimate project duration
	Sources.
		• Identifying usability issues and recommending improvements
		• Produce low-fidelity prototypes (sketches, wireframes)
		• Produce high-fidelity prototypes (digital mock-ups)
		• Interpret prototypes created by others
		• Explain how prototypes support iterative design
		• Accessibility needs (visual, auditory, motor, cognitive)
		• Inclusive design principles
		• How to adapt interfaces to meet accessibility requirements
		
		Topic Area 6: Job Roles and Skill
		
		1. Technical Skills
		
		These are the practical, job-specific abilities needed in computing and application development.
		
		• Understanding of software development processes
		• Ability to use development tools and environments
		• Understanding of testing methods
		• Ability to troubleshoot and solve technical problems
		• Awareness of cybersecurity principles
		• Understanding of data handling and storage
		• Ability to work with documentation and technical specifications
			• Applying layout principles (alignment, spacing, grids)
			• Using colour theory effectively
			• Choosing appropriate typography
			• Designing intuitive navigation
			• Creating consistent visual styles and components
			• Designing for different devices (responsive/adaptive design)
			2. User Experience (UX) Skills
			• Designing clear user journeys and flows
			• Ensuring usability (simplicity, clarity, consistency)
			• Applying accessibility principles (contrast, readability, alternative text, etc.)
			• Considering user needs and behaviours
			• Providing feedback mechanisms (hover states, error messages, confirmations)
			3. Technical & Tool-Based Skills
			• Using UX/UI design software (e.g., Figma, Adobe XD, Sketch)
			• Creating interactive prototypes (if required)
			• Exporting or presenting designs clearly
			• Using layers, components, and design systems effectively
			4. Communication & Justification Skills
			• Justifying design choices using UX/UI principles
			• Explaining how your design meets the brief
			• Communicating ideas clearly and professionally
			• Annotating designs to show functionality and interaction

	• Breaking down a project into tasks and subtasks
	• Identifying dependencies between tasks
	• Estimating realistic timeframes
	• Recognising constraints and risks
	• Select the most appropriate planning tool for a given scenario
	• Justify why a particular tool is suitable
	• Adapt planning tools to different project sizes or complexities
	• Identify **Strengths**, **Weaknesses**, **Opportunities**, and **Threats** for a project
	• Use SWOT findings to inform planning decisions
	
	<u>Topic Area 2: Software development models</u>
	
	• Identify and describe common development models such as:
	  ○ Waterfall
	  ○ Agile
	  ○ Iterative
	  ○ Spiral
	  ○ V-Model
	• Explain the purpose and characteristics of each model
	• Evaluating strengths and weaknesses of each model
	• Comparing suitability for different project types
	• Understanding when a model is *not* appropriate
	• Select the most appropriate methodology for a given situation
	• Justify your choice using technical reasoning
		2. Professional Skills
		
		These relate to how someone works within an organisation.
		
		• Time management
		• Organisation and planning
		• Working to deadlines
		• Following policies and procedures
		• Understanding legal and ethical considerations
		• Professional conduct in the workplace
		• Ability to work independently and take responsibility
		
		3. Interpersonal & Communication Skills
		
		These are essential for collaboration and effective teamwork.
		
		• Verbal communication
		• Written communication
		• Active listening
		• Presenting information clearly
		• Teamwork and collaboration
		• Negotiation and conflict resolution
		• Ability to adapt communication for different audiences
		
		4. Career-Related Skills
		
		Topic Area 6 also includes skills linked to employability and career development.
			• Using correct terminology (e.g., hierarchy, affordance, feedback, wireframe, prototype)
			5. Documentation & Presentation Skills
			Your work must be well-organised and professional:
			• Structuring your design documentation logically
			• Presenting mock-ups clearly
			• Labelling and annotating screens
			• Ensuring your work is easy to understand for a non-technical audience
			• Referencing any external resources used
			6. Professional & Organisational Skills
			Even in a creative task, OCR looks for:
			• Meeting the brief requirements
			• Working systematically
			• Attention to detail
			• Consistency across all screens
			• Following accessibility and legal guidelines
			F162: Designing and Communicating UX/UI Solutions,
			Communicating the UX/UI solution Task 3
			1. Visual Communication Skills
			• Creating clear, readable screen designs
			• Using annotations to explain features and interactions
			• Showing layout, navigation, and user flows visually
			• Presenting screens in a logical order
			• Ensuring visuals match your final prototype
			2. Explanation & Justification Skills
			• Justifying design choices using UX/UI principles

	• Adapt a methodology to meet project constraints (e.g., time, budget, risk)
	• Describe SDLC phases such as:
	  ○ Requirements gathering
	  ○ Design
	  ○ Development
	  ○ Testing
	  ○ Deployment
	  ○ Maintenance
	• Explain how different methodologies, structure or modify these phases
	• Understand how testing fits into each methodology
	• Compare early-testing vs late-testing approaches
	• Recognise the impact of testing on project quality and risk
	• Iteration
	• Increment
	• Prototype
	• Sprint
	• Milestone
	• Deliverable
	• Stakeholder
	• Identify constraints such as time, cost, scope, risk, and resources
	• Explain how these constraints influence the choice of methodology
	
	Topic Area 4: Application design scoping
	
	• Use appropriate methods to gather requirements (interviews, questionnaires, observations, workshops)
	• Identify functional and non-functional requirements
		• Understanding job roles in IT (e.g., application designer, mobile app designer, project manager)
		• Ability to research careers
		• CV writing and personal profiling
		• Understanding responsibilities within different roles
		• Awareness of progression routes in the IT industry
		
		F162: Designing and communicating UX/UI solutions
		Planning the UX/UI solution (Related to Task 1)
		
		1. Research Skills
		
		• Investigate existing UX/UI solutions
		• Identify common design patterns
		• Research user interface standards
		• Gather information from reliable sources
		• Compare different UX/UI approaches
		• Understand cross-platform design expectations
		
		2. Analytical Skills
		
		• Identify strengths and weaknesses of existing interfaces
		• Evaluate usability and accessibility features
		• Analyse layout, navigation, typography, colour, and interaction design
		
		• Explain why certain design choices work (or don't)
			• Explaining how your design meets user needs
			• Linking decisions to accessibility, usability, and the brief
			• Describing how your design supports user journeys
			• Explaining how feedback from testing influenced changes
			3. Organisational & Structuring Skills
			• Structuring your explanation logically
			• Grouping related screens or features
			• Presenting information in a professional format
			• Ensuring clarity for a non-technical audience
			4. Written Communication Skills
			• Using correct UX/UI terminology
			• Writing clearly and concisely
			• Avoiding ambiguity
			• Explaining interactions, states, and behaviours
			• Summarising key features and improvements
			5. User-Focused Communication Skills
			• Describing how users will navigate the interface
			• Explaining how the design supports user goals
			• Highlighting accessibility considerations
			• Showing how the design improves the user experience
			6. Professional Presentation Skills
			• Consistent formatting
			• Clear labelling of screens and components
			• Accurate referencing of any sources

	• Ask clarifying questions to ensure accuracy
	• Record requirements clearly and professionally
	• Writing clear, structured requirement specifications
	• Distinguishing between:
	  ○ Functional requirements (what the system must do)
	  ○ Non-functional requirements (performance, usability, security, reliability)
	• Ensuring specifications are complete, testable, and unambiguous
	• Break down a project into smaller, manageable components
	• Use decomposition to identify tasks, modules, or system components
	• Understand how decomposition supports planning and development
	• Interpret client goals, constraints, and priorities
	• Identify missing or conflicting requirements
	• Evaluate feasibility based on time, budget, and resources
	• Communicate requirements in a format suitable for stakeholders
	• Use diagrams or structured documents where appropriate
	• Ensure clarity, accuracy, and professionalism
	• Checking requirements with the client
	• Ensuring requirements align with project objectives
	• Making revisions based on feedback
		• Apply UX principles such as consistency, affordance, feedback, and simplicity
		
		3. Communication & Documentation Skills
		
		• Present research in a structured, readable format
		• Use correct UX/UI terminology
		• Explain design concepts clearly for a non-technical audience
		• Create annotated diagrams or screenshots (if required)
		• Produce clear written justifications for your analysis
		
		4. UX/UI Knowledge & Conceptual Skills
		
		• UX principles (usability, accessibility, user needs)
		• UI principles (layout, visual hierarchy, consistency)
		• Standard interface components (buttons, menus, icons, forms)
		• Cross-platform design considerations (mobile vs desktop)
		• Interaction design (feedback, states, navigation flows)
		
		F164: Website development
		Planning and designing the high-fidelity website prototype (Related to Task 1)
		
		1. Research & Investigation Skills
		
		• Research existing websites relevant to the brief
			• High-quality visuals (no pixelation, no clutter)
			7. Reflective & Evaluative Skills
			• Identifying strengths of your final design
			• Acknowledging limitations
			• Explaining improvements made from earlier stages
			• Demonstrating awareness of design trade-offs
			
			<u>F164: Website Development</u>
			<u>Creating a High-Fidelity Website Prototype Task 2</u>
			
			1. UI/UX Design Skills
			• Understanding user-centred design principles
			• Ability to create intuitive layouts and navigation
			• Knowledge of accessibility standards (contrast, readability, keyboard navigation)
			• Wireframing and low-fidelity prototyping before moving to high-fidelity
			2. Prototyping Tool Proficiency
			• Figma
			• Adobe XD
			• Sketch
			• Axure RP
			Skills include:
			• Creating interactive components
			• Building responsive layouts
			• Using design systems and style guides
			3. Visual Design Skills
			• Typography (hierarchy, pairing, readability)

	Topic Area 5: Human computer interface and interaction • Explain what HCI is and why it matters • Understand how humans process information (perception, memory, attention) • Recognise how these factors influence interface design • Consistency • Feedback • Affordance • Visibility • Error prevention • Accessibility • Usability heuristics (e.g., Nielsen's principles) • Identify different user groups (novice, expert, disabled users, children, elderly) • Adapt interface design to meet their needs • Recognise cultural, physical, and cognitive difference You should be able to describe, compare, and evaluate: • Graphical User Interfaces (GUIs) • Command Line Interfaces (CLIs) • Touch interfaces • Voice interfaces • Natural user interfaces (NUIs) • Menu-driven interfaces • Planning usability tests • Selecting appropriate test methods (observation, think-aloud, questionnaires)	• Identify common design patterns and industry standards • Analyse competitor websites • Gather information about user needs and expectations • Understand accessibility and legal requirements (e.g., WCAG, copyright) **2. Analytical Skills** • Identify strengths and weaknesses of existing websites • Analyse layout, navigation, colour schemes, typography, and structure • Evaluate usability and accessibility features • Explain why certain design choices work well (or don't) • Apply web design principles such as consistency, readability, and responsiveness **3. Design & Planning Skills** • Create a clear website structure (sitemap) • Produce wireframes or page mock-ups • Plan navigation flow • Choose appropriate colour palettes and typography • Consider responsive design for different devices • Plan content placement and hierarchy • Justify design decisions with reference to UX/UI principles	• Colour theory and palette creation • Spacing, alignment, and grid systems • Iconography and imagery selection **4. Information Architecture** • Structuring content logically • Creating sitemaps and user flows • Understanding how users move through a site **5. Usability Testing & Iteration** • Conducting user testing on prototypes • Gathering feedback and refining designs • Understanding heuristics (e.g., Nielsen's usability principles) **6. Basic Front-End Awareness** • HTML/CSS structure • Responsive design concepts • How developers interpret design files **7. Documentation & Presentation** • Creating design rationale • Annotating prototypes for developers • Presenting your prototype clearly and professionally **8. Problem-Solving & Creativity** • Translating requirements into visual solutions • Balancing aesthetics with functionality • Thinking from the user's perspective

	• Recording and analysing results	4. Communication & Documentation Skills • Use correct web-design terminology • Present research and design ideas clearly • Annotate wireframes or mock-ups • Explain decisions in a structured, logical way • Reference sources appropriately 5. Professional & Organisational Skills • Working to the brief • Organising work logically • Following constraints (branding, audience, purpose) • Presenting work professionally • Showing attention to detail F162: Designing and communicating UX/UI solutions Designing the UX/UI solution (Related to Task 2) 1. UX/UI Design Skills • Designing user interfaces that meet the brief • Creating wireframes and high-fidelity mock-ups • Applying layout principles (alignment, spacing, grids) • Using colour theory effectively • Choosing appropriate typography • Designing intuitive navigation • Creating consistent visual styles and components • Designing for different devices (responsive/adaptive design)	

		2. User Experience (UX) Skills • Designing clear user journeys and flows • Ensuring usability (simplicity, clarity, consistency) • Applying accessibility principles (contrast, readability, alternative text, etc.) • Considering user needs and behaviours • Providing feedback mechanisms (hover states, error messages, confirmations) 3. Technical & Tool-Based Skills • Using UX/UI design software (e.g., Figma, Adobe XD, Sketch) • Creating interactive prototypes (if required) • Exporting or presenting designs clearly • Using layers, components, and design systems effectively 4. Communication & Justification Skills • Justifying design choices using UX/UI principles • Explaining how your design meets the brief • Communicating ideas clearly and professionally • Annotating designs to show functionality and interaction • Using correct terminology (e.g., hierarchy, affordance, feedback, wireframe, prototype) 5. Documentation & Presentation Skills Your work must be well-organised and professional: • Structuring your design documentation logically • Presenting mock-ups clearly • Labelling and annotating screens	

		• Ensuring your work is easy to understand for a non-technical audience • Referencing any external resources used 6. Professional & Organisational Skills Even in a creative task, OCR looks for: • Meeting the brief requirements • Working systematically • Attention to detail • Consistency across all screens • Following accessibility and legal guidelines F164: Website development Creating the high-fidelity website prototype (Related to Task 2) 1. Technical Web Development Skills You must demonstrate the ability to build a functioning, high-fidelity website prototype using industry-standard technologies: • Writing clean, valid HTML • Styling pages using CSS (including layout systems like flexbox or grid) • Embedding multimedia (images, video, audio) • Creating responsive layouts for different screen sizes • Implementing navigation menus • Using forms and interactive elements • Applying basic JavaScript for interactivity (if required by the brief) • Ensuring cross-browser compatibility 2. Visual & UX/UI Design Skills • Translating wireframes into real web pages • Applying consistent colour schemes and typography • Maintaining visual hierarchy and spacing • Ensuring intuitive navigation	

		• Using appropriate imagery and media • Designing for readability and clarity • Applying branding consistently 3. Accessibility & Standards Compliance • Using semantic HTML • Ensuring sufficient colour contrast • Adding alt text to images • Making navigation keyboard-friendly • Following WCAG principles • Ensuring code meets W3C validation standards 4. Problem-Solving & Debugging Skills • Identifying and fixing layout issues • Debugging HTML/CSS errors • Testing responsiveness • Troubleshooting broken links or media • Adjusting designs when technical constraints arise 5. Applying Design Decisions • Implementing the planned structure (sitemap, page layouts) • Following the chosen design patterns • Ensuring the prototype meets user needs and the brief • Justifying any changes from the original plan 6. Communication & Documentation Skills • Annotating or explaining features if required • Presenting your prototype professionally • Using correct terminology • Demonstrating how your design meets the brief 7. Professional Working Practices • Organisation and time management • Attention to detail	

		• Consistency across all pages • Meeting the brief and constraints • Producing work to a professional standard	
Vocabulary	Please see KS5 Computing vocabulary and definitions	Please see KS5 Computing vocabulary and definitions	Please see KS5 Computing vocabulary and definitions
Assessment	F160 – TA3 Project Planning KMP F160 - TA1 End of Unit KMP F160 - TA2 End of Unit KMP F160 – Topic Area 4 KMP	F160 – TA5 Project Planning KMP F160 – TA6 Project Planning KMP F162 – Task 1 Interim KMP F162 – Task 1 Coursework F162 – Task 2 Interim KMP F162 – Task 2 Coursework F162 – Task 3 Interim KMP	F162 – Task 3 Coursework F164 – Task 2 Interim KMP F164 - Coursework

Key Stage 5: Year 13 – Long Term Planning – OCR Cambridge Technicals L3 qualification

	Autumn Term	Spring Term	Summer Term
Knowledge	Unit 2 Global Information LO1 — Understand where information is held globally and how it is transmitted 1.1 Holders of information • Categories of holders: o Individual citizens o Businesses o Educational institutions	Unit 6 Designing Applications Unit 6: Application Design — Knowledge Needed for P5, P6, M2, D2 P5 — Produce Designs for an Application To meet P5, you need knowledge of: 1. Design Documentation • Purpose of design documents • Importance of clarity and consistency	OCR Cambridge Technicals Level 3 IT – Unit 17: Internet of Everything (IoE) for P1, M1, P2, D1, P3, M2, P4, P5, M3, and D2. Unit 17 – Internet of Everything: Knowledge Requirements P1 – Explain the Internet of Everything (IoE) Knowledge required: • What “things” are in IoE:

	○ Governments ○ Charities ○ Healthcare services ○ Community organisations • Locations: ○ Developed vs developing countries ○ Urban vs rural ○ Home vs workplace • Global divide: • Technology availability • Access issues 1.2 Types of information storage media • Paper (forms, notes, maps, directories) • Optical media (CD, DVD, Blu-ray) • Magnetic media (hard drives, tapes) • Solid-state media (USB, SSD, memory cards) 1.3 Types of information • Primary / secondary • Qualitative / quantitative • Internal / external • Open / closed • Confidential / classified / sensitive • Personal / business 1.4 Information formats • Text • Numeric • Audio • Graphics • Video • Tactile • Subtitles • Boolean 1.5 Information transmission methods • Email	• How design supports development and testing 2. User Interface (UI) Design • Layout principles • Navigation structure • Wireframes / mock-ups • Use of colour, typography, icons • Accessibility considerations 3. Interaction Design • User journeys • Input/output methods • Error handling • Feedback mechanisms (messages, alerts, confirmations) 4. Data Requirements • Data inputs • Data outputs • Data storage needs • Data flow between components 5. Functional Requirements • Core features • Optional features • Constraints (hardware, software, time, budget) P6 — Create a Prototype of the Application Design To meet P6, you need knowledge of: 1. Prototyping Methods • Low-fidelity prototypes (paper, sketches) • High-fidelity prototypes (digital, interactive) • Tools used (e.g., Figma, XD, PowerPoint, HTML mock-ups) 2. Prototype Functionality • Simulating navigation • Demonstrating key features • Showing user interactions	○ physical objects, experiential interactions, aids to people/society, machines • Where IoE is used (contexts and environments) • Applications of IoE: ○ body/health, home/garden, city/neighbourhood, industry, environment • Global impacts of IoE: ○ positive, negative, cost savings, productivity, revenue, citizen experience • The four pillars of IoE: ○ people, data, process, things (devices/objects) • How people connect: devices, social networks, wearables • How data becomes information for decision-making M1 – Assess the global impact of the IoE Knowledge required: • Economic impacts (cost savings, productivity, new revenue) • Social impacts (citizen experience, lifestyle changes) • Environmental impacts (monitoring, sustainability) • Risks and challenges (privacy, security, dependency) • How IoE affects different sectors globally (health, cities, industry) P2 – Explain the potential uses of IoE Knowledge required: • IoE applications across:

	• Fax • SMS • Social media • Teleconferencing • Cloud services • Streaming • Peer-to-peer LO2 — Understand the styles, classification and management of global information 2.1 Information styles • Formal / informal • Narrative • Numeric • Graphical • Audio • Video • Tactile • Braille • Charts / tables 2.2 Information classification • Sensitive • Private • Public • Personal • Business • Confidential • Classified 2.3 Information management • Validation • Verification • Checking accuracy • Updating • Storage • Security • Backup • Recovery	• Representing data flow visually 3. Usability Principles • Consistency • Learnability • Efficiency • Error prevention • Accessibility 4. Presenting a Prototype • How to demonstrate functionality • How to explain design decisions • How to gather feedback M2 — Justify the Design Decisions Made To achieve M2, you need knowledge of: 1. Design Rationale • Why specific UI choices were made • Why certain layouts, colours, or navigation structures were chosen • Why particular data structures or flows were selected 2. User-Centred Design • How the design meets user needs • How accessibility was considered • How the design supports usability 3. Technical Considerations • Compatibility with devices/platforms • Performance considerations • Security implications • Feasibility within constraints 4. Comparing Alternatives • Strengths and weaknesses of rejected design options • Evidence-based justification (research, standards, user feedback) D2 — Evaluate the Prototype Against the Design and User Requirements To achieve D2, you need knowledge of:	○ health, home automation, smart cities, industrial systems, environmental monitoring • How IoE devices interact with people, data, and processes • Examples of real-world IoE systems (smart meters, wearables, connected appliances) D1 – Evaluate the potential impact of IoE uses Knowledge required: • Strengths and weaknesses of IoE applications • Long-term implications for society, business, and individuals • Ethical, privacy, and security considerations • Cost–benefit analysis of IoE adoption • Evidence-based evaluation using examples from P2 P3 – Carry out a feasibility study for an IoE idea Knowledge required: • What a feasibility study includes: ○ technical feasibility ○ financial feasibility ○ operational feasibility ○ legal/ethical considerations ○ timescales and resources • Understanding of IoE technologies and constraints • How to assess risks and limitations M2 – Justify the feasibility of the IoE idea Knowledge required: • How to justify decisions using evidence • Linking feasibility to: ○ technical capability ○ cost ○ user needs ○ legal/ethical constraints

	LO3 — Understand the use of global information by organisations 3.1 Categories of information used by organisations • Financial • Personnel • Marketing • Manufacturing • Sales • Purchasing 3.2 Sources of information • Internal • External • Primary • Secondary 3.3 Information used for decision-making • Tactical • Strategic • Operational 3.4 Information flow • Input → Process → Output • Data vs information • Information systems LO4 — Understand the legal and regulatory framework governing global information 4.1 Legislation • Data Protection Act • Computer Misuse Act • Freedom of Information Act • Regulation of Investigatory Powers Act • Copyright, Designs and Patents Act • Equality Act 4.2 Regulatory bodies • ICO (Information Commissioner's Office) • Ofcom	1. Evaluation Techniques • User testing • Expert review • Heuristic evaluation • Scenario-based testing 2. Measuring Success • How well the prototype meets: • Functional requirements • User requirements • Accessibility needs • Usability goals 3. Identifying Strengths and Weaknesses • What works well • What needs improvement • Evidence from testing 4. Making Recommendations • Improvements to UI • Improvements to functionality • Changes to navigation • Enhancements to accessibility • Technical refinements 5. Linking Back to Requirements • How the prototype aligns with: • Initial brief • Client needs • User expectations • Design documentation OCR Cambridge Technicals Level 3 IT – Unit 21: Web Design and Prototyping for the criteria P4, P5, P6, M2, M3, and D2. Unit 21 Assessment Criteria – Knowledge You Need P4 – Create a Prototype Website To meet P4, you need knowledge of: Web Authoring Tools & Languages	• Understanding of IoE infrastructure and data flows P4 – Pitch the IoE idea to stakeholders Knowledge required: • How to structure a professional pitch • Communication techniques for technical concepts • Understanding stakeholder needs and expectations • How to present feasibility findings clearly P5 – Review stakeholder feedback Knowledge required: • Methods of gathering feedback (surveys, interviews, Q&A) • How to interpret and categorise feedback • How to identify improvements based on feedback • Understanding of iterative development M3 – Justify improvements made after feedback Knowledge required: • How to link feedback to specific changes • How to justify improvements using: o user needs o feasibility constraints o technical considerations • Understanding of how changes improve the IoE solution D2 – Evaluate the final IoE proposal Knowledge required: • Evaluation techniques (strengths, weaknesses, risks, opportunities) • How to measure success against: o client requirements o feasibility findings o stakeholder feedback

	• Trading Standards 4.3 Compliance • Consequences of non-compliance • Audits • Policies LO5 — Understand the process flow of information 5.1 Data flow diagrams • External entities • Processes • Data stores • Data flows 5.2 Information flow models • Centralised • Distributed • Decentralised 5.3 Information systems • MIS • CRM • ERP • Knowledge management systems LO6 — Understand the principles of information security 6.1 Risks • Accidental loss • Intentional damage • Theft • Natural disasters 6.2 Protection methods • Physical security • Logical security • Encryption • Backups • Disaster recovery 6.3 Impact of security breaches • Financial loss	• HTML structure and semantic tags • CSS for layout, styling, responsiveness • Basic JavaScript for interactivity • Use of templates, libraries, or frameworks (e.g., Bootstrap) Website Structure • Page layout conventions • Navigation systems (menus, breadcrumbs, links) • Internal and external linking • Use of multimedia (images, video, audio) Responsive Design • Media queries • Flexible grids • Mobile-first design principles Interactive Elements • Forms and validation • Buttons, sliders, galleries • Embedded content P5 – Test the Prototype Website Knowledge required: Testing Methods • Functional testing • Usability testing • Compatibility testing (browsers, devices) • Responsiveness testing • Accessibility testing (WCAG basics) Test Documentation • Test plans • Test cases • Expected vs. actual results • Recording bugs and issues P6 – Review the Prototype Website Knowledge required: Evaluation Techniques	• Understanding of IoE system performance and user impact • Ability to make evidence-based recommendations

	• Reputational damage • Legal consequences	• Comparing the prototype against client requirements • Identifying strengths and weaknesses • Assessing usability, accessibility, and performance • Gathering user/client feedback • Suggesting improvements M2 – Justify the Design Decisions Knowledge required: Design Rationale • Why specific layouts, colours, fonts, and navigation structures were chosen • How design choices support: • User needs • Client requirements • Accessibility • Branding • Usability principles (e.g., consistency, simplicity) User-Centred Design • Personas • User journeys • How design decisions improve user experience M3 – Justify the Testing Methods Knowledge required: Why Each Test Was Chosen • How each test ensures: • Functionality • Usability • Accessibility • Compatibility • Responsiveness Testing Best Practice • Importance of systematic testing • Why certain tools or devices were used	

		• How testing supports a professional development workflow D2 – Evaluate the Prototype Against Client Requirements Knowledge required: Critical Evaluation Skills • How to measure success against: • Client brief • Functional requirements • Design requirements • Accessibility standards • Performance expectations Improvement Analysis • Identifying what worked well • Identifying what needs improvement • Prioritising improvements • Explaining how changes would enhance: • User experience • Functionality • Client satisfaction Professional Communication • Presenting findings clearly • Using evidence from testing and feedback • Making justified recommendations	
Skills	Unit 2 Global Information 1. Information Handling & Understanding • Identify different **holders of information** globally. • Compare **types of information** (primary/secondary, qualitative/quantitative, etc.). • Recognise and evaluate **information formats** (text, audio, video, graphics). • Explain how information is **stored**, **accessed**, and **transmitted**. 2. Analysis & Interpretation	Unit 6 Designing Applications Unit 6: Application Design — Skills Needed for P5, P6, M2, D2 P5 — Produce Designs for an Application Design Production Skills • Create **clear, accurate design documentation** (wireframes, storyboards, mock-ups). • Structure a **logical navigation flow** for the application. • Apply **UI/UX design principles** (layout, spacing, consistency, readability).	OCR Cambridge Technicals Level 3 IT – Unit 17: Internet of Everything (IoE). Unit 17 – Internet of Everything (IoE): Skills Needed for P1–D2 P1 – Explain the concept of the Internet of Everything Skills Needed • Ability to define IoE clearly and accurately • Understanding the difference between IoE and IoT • Ability to describe how people, data, processes, and things connect

	• Analyse the **quality** of information (accuracy, reliability, bias).
	• Classify information using categories such as **sensitive**, **private**, **public**, **confidential**.
	• Interpret how organisations use information for **decision-making**.
	• Evaluate the **benefits and drawbacks** of information for individuals and organisations.
	3. Application to Organisations
	• Apply knowledge of information types to **real-world scenarios**.
	• Explain how organisations use information in areas like:
	  ○ Finance
	  ○ Marketing
	  ○ Sales
	  ○ Operations
	• Understand and describe **data analysis stages** and **tools**.
	4. Legal & Regulatory Awareness
	• Apply legislation (e.g., Data Protection Act, Computer Misuse Act) to scenarios.
	• Identify breaches and explain **consequences** for organisations.
	• Evaluate the impact of **global information protection laws**.
	• Understand and apply **Green IT** principles.
	5. Process Flow & Modelling
	• Interpret and create **data flow diagrams (DFDs)**.
	• Identify **information sources** and **data types**.
		• Incorporate **accessibility** considerations (colour contrast, font size, simple navigation).
		• Identify and document **functional and non-functional requirements**.
		• Define **data requirements**, including inputs, outputs, and storage needs.
		Analytical Skills
		• Interpret client/user requirements and translate them into design features.
		• Break down complex requirements into manageable design components.
		P6 — Create a Prototype of the Application Design
		Prototyping Skills
		• Build a **functional prototype** (low- or high-fidelity) that reflects the design.
		• Use appropriate tools (e.g., Figma, XD, PowerPoint, HTML mock-ups).
		• Simulate **user interactions** such as buttons, menus, and navigation.
		• Represent **data flow** visually or interactively.
		Usability Skills
		• Apply usability principles:
		  ○ Consistency
		  ○ Learnability
		  ○ Efficiency
		  ○ Error prevention
		• Present the prototype clearly to users or assessors.
		M2 — Justify the Design Decisions Made
		Evaluation & Justification Skills
		• Explain **why** specific design choices were made (layout, colours, navigation).
		• Compare **alternative design options** and justify the chosen approach.
			• Skill in giving real-world examples of IoE systems
			• Ability to communicate technical ideas in simple, structured language
			M1 – Compare IoE with IoT
			Skills Needed
			• Analytical comparison skills
			• Ability to identify similarities and differences
			• Understanding of scope, scale, and purpose of IoT vs IoE
			• Ability to evaluate benefits and limitations of each
			• Clear comparative writing (tables, structured paragraphs, etc.)
			P2 – Describe how IoE is used in different sectors
			Skills Needed
			• Knowledge of IoE applications in sectors such as:
			  ○ Healthcare
			  ○ Retail
			  ○ Transport
			  ○ Education
			  ○ Manufacturing
			• Ability to explain sector-specific use cases
			• Skill in linking IoE features to business or societal benefits
			• Ability to research and summarise examples
			D1 – Evaluate the impact of IoE on organisations and individuals
			Skills Needed
			• Critical evaluation skills
			• Ability to weigh advantages vs disadvantages

	• Explain how information moves through systems (input → process → output).
	• Understand **information system structures** (MIS, CRM, ERP).
	6. Information Security Skills
	• Identify **risks** to information (accidental, intentional, environmental).
	• Evaluate **impacts** of security breaches.
	• Recommend **physical** and **logical** protection measures.
	• Apply principles of **confidentiality, integrity, availability**.
	7. Exam-Ready Skills
	• Interpret scenario-based questions.
	• Apply theory to unfamiliar contexts.
	• Construct clear, structured written responses.
	• Justify recommendations with evidence and reasoning.
		• Link design decisions to:
		• User needs
		• Accessibility
		• Technical constraints
		• Client requirements
		Evidence-Based Reasoning
		• Use research, standards, or user feedback to support your decisions.
		• Demonstrate understanding of **application development models** (e.g., agile, RAD) when relevant.
		D2 — Evaluate the Prototype Against the Design and User Requirements
		Critical Evaluation Skills
		• Compare the prototype to:
		  ○ The original design documents
		  ○ User requirements
		  ○ Client expectations
		• Identify strengths, weaknesses, and limitations.
		Testing & Feedback Skills
		• Conduct or interpret:
		  ○ User testing
		  ○ Heuristic evaluation
		  ○ Scenario-based testing
		• Use feedback to assess usability, accessibility, and functionality.
		Improvement & Recommendation Skills
		• Suggest realistic improvements to:
		  ○ UI
		  ○ Navigation
		  ○ Functionality
		  ○ Accessibility
		  ○ Performance
		• Prioritise improvements based on impact and feasibility.
			• Understanding of ethical, social, legal, and economic impacts
			• Ability to justify opinions with evidence
			• Skill in writing balanced, well-reasoned arguments
			P3 – Explain the technologies that enable IoE
			Skills Needed
			• Understanding of enabling technologies such as:
			  ○ Sensors
			  ○ RFID
			  ○ Cloud computing
			  ○ Wireless networks
			  ○ Big data analytics
			• Ability to explain how these technologies work together
			• Skill in describing technical processes clearly
			M2 – Explain the challenges of implementing IoE
			Skills Needed
			• Understanding of technical challenges (security, interoperability, bandwidth)
			• Awareness of organisational challenges (cost, skills gaps, integration)
			• Ability to explain risks and constraints
			• Skill in linking challenges to real-world examples
			P4 – Design an IoE solution to meet a given brief
			Skills Needed
			• Requirements-gathering and interpretation
			• Ability to design a system architecture (devices, data flow, connectivity)
			• Creative problem-solving
			• Ability to justify design choices
			• Clear diagramming and documentation skills

		Unit 21: Web Design and Prototyping for P4, P5, P6, M2, M3, and D2 P4 – Skills Needed to Create a Prototype Website Technical Web Development Skills • Writing clean, valid HTML • Applying CSS for layout, styling, and responsiveness • Adding basic JavaScript for interactivity • Embedding multimedia (images, video, audio) Website Construction Skills • Building multi-page site structures • Creating intuitive navigation systems • Using templates or frameworks effectively • Ensuring consistent design across pages Responsive Design Skills • Using media queries • Designing layouts that adapt to different screen sizes • Testing mobile-first layouts P5 – Skills Needed to Test the Prototype Website Testing Execution Skills • Creating and following a test plan • Designing test cases with expected outcomes • Performing functional, usability, compatibility, and accessibility tests • Using browser developer tools for debugging Documentation Skills • Recording test results clearly • Identifying bugs and issues • Suggesting fixes based on evidence P6 – Skills Needed to Review the Prototype Website Evaluation Skills	P5 – Create a project plan for the IoE solution Skills Needed • Project planning skills • Ability to create: o Gantt charts o Task lists o Milestones o Resource plans o Risk assessments • Understanding of dependencies and timelines • Ability to structure a realistic, achievable plan M3 – Justify the design and project plan Skills Needed • Ability to justify design decisions with evidence • Ability to explain why chosen technologies are appropriate • Skill in defending the project plan (timelines, resources, risks) • Clear, persuasive writing D2 – Evaluate the effectiveness of the IoE solution Skills Needed • Evaluation and reflection skills • Ability to measure success against requirements • Skill in identifying strengths, weaknesses, and improvements • Ability to use evidence to support conclusions • Clear, structured evaluative writing

		• Comparing the website against client requirements • Identifying strengths and weaknesses • Analysing usability, accessibility, and performance • Gathering and interpreting user/client feedback Communication Skills • Writing a structured review • Presenting findings clearly and professionally M2 – Skills Needed to Justify Design Decisions Design Rationale Skills • Explaining why specific colours, fonts, layouts, and navigation choices were made • Linking design decisions to: • User needs • Client requirements • Accessibility • Branding • Usability principles User-Centred Design Skills • Using personas and user journeys • Showing how design choices improve user experience M3 – Skills Needed to Justify Testing Methods Analytical Testing Skills • Explaining why each test type was chosen • Linking tests to: • Functionality • Usability • Accessibility • Compatibility • Responsiveness Professional Testing Skills	

		• Demonstrating understanding of systematic testing • Justifying tools, devices, and methods used **D2 – Skills Needed to Evaluate the Prototype Against Client Requirements** **Critical Evaluation Skills** • Assessing how well the prototype meets: • Functional requirements • Design requirements • Accessibility standards • Performance expectations **Improvement & Recommendation Skills** • Identifying what works well and what doesn't • Prioritising improvements • Explaining how changes would enhance: • User experience • Functionality • Client satisfaction **Professional Presentation Skills** • Presenting evaluation findings clearly • Using evidence from testing and feedback • Making justified, realistic recommendations	
Vocabulary	Please see KS5 Computing vocabulary and definitions	Please see KS5 Computing vocabulary and definitions	Please see KS5 Computing vocabulary and definitions
Assessment	Unit 2 • LO1 KMP • LO4 Interim Test • LO4 End of Unit KMP • LO5 End of Unit KMP • LO2 KMP • LO6 End of Unit KMP • Walking Talking Unit 2 Mocks	Unit 6 • P5P6 • M2 • M3 • D2 • Unit 21 • P4 • P5 • P6	Unit 17 • P1 • P2 • P3 • P3 • P5 • P5 • M1 • M2

		• M3 • D2	• M3 • D1 • D2