

**Digital Information Technology Curriculum Intent**

Provide students with the opportunity to develop a broad knowledge and understanding of the digital sector. Students will also practice specialist skills and techniques such as project planning, designing user interfaces and manipulating and interpreting data in spreadsheets.

Digital Information Technology Curriculum Overview

Component 1 (completed in Y10)	Component 2 (completed Y10)	Component 3 (completed in Y11)
Explore User Interface Design	Creating and interpreting Data	Effective Digital Working Practices
Key Question		
What makes an effective user interface and how do we effectively manage a project?	What are the characteristics of data and information and how do they help organisations in decision making?	How do organisations use digital systems and what are the wider implications associated with their use?
Key Vocabulary		
1. User Interface 2. Audience 3. Design Principles 4. Project Planning Techniques 5. Prototyping 6. Evaluation	1. Data 2. Information 3. Data modelling 4. Data processing 5. Data manipulation 6. Data Dashboard	1. Modern Technologies 2. Cyber Security 3. Digital Systems 4. Legal 5. Ethical 6. Notation

	The knowledge you will need to recall:	How you will apply this knowledge:	This links to:
1a	- A project brief will outline the requirements, audience and purpose of the project. - A project requirement describes something that the project needs to accomplish to be successful for its audience and purpose. - An accessibility requirement describes something that the UI needs to have to help people, particularly those with additional needs, access and use the UI. Examples include screen readers, voice-control, colour-blind settings and large text. - A constraint is something that stops a project being the best it can be. Examples include financial and time constraints.	- You will use the project brief document to find out the intended target audience for the UI as well as the purpose of the UI. Using your own knowledge, you will describe how this affects the delivery of the project - You will use the project brief document to find and explain the project requirements of the User Interface and how they impact on the project. - Using the project brief and your own knowledge, you will decide what the user requirements and user accessibility requirements of the project are and write an explanation of them. - You will use your own knowledge and the project brief to list and explain the constraints that the project will be bound by.	Year 7 topic 1 Computing Fundamentals introduces students to basic computing skills and requirements of computer systems. Year 9 topic 4 App Development introduces students to the ideas of designing a product for an end user. This includes teaching students about intended audience and purpose of the product as well as how to write useful requirements. During this topic, the students also delve more deeply into accessibility features.
1b	- A GANTT chart is a project management tool that is used for planning the sequence, timing and duration of tasks. - Tasks are decomposed into subtasks and the project is broken down into stages. - A milestone is a key point in a project. Examples include the completion of major tasks, kick-off, sign-off or review meetings and pre-arranged deadlines. - Some tasks are dependent on others. Tasks should be planned in a sequence that takes account of the dependencies. This will allow the project to progress as fast as possible.	- You will use a project brief document to determine the key stages and timings for the delivery of the User Interface project. - You will deconstruct the stages of the project into a list of tasks and subtasks with key milestones which must be met. - You will use Microsoft Excel to create a GANTT chart of your Project Plan. IT will show the expected timescales, sequencing and dependencies of each task and subtask. The GANTT chart will reference the project briefing and provided additional information on key project stages and meetings. - You will make use of colours, symbols, annotation and a key to ensure that your GANTT chart is fully explained and easy to read.	Throughout the curriculum, students will have been creating project-based work (year 7 topic 6, year 8 topic 6 and year 9 topic 6). A key part of this work is to plan for the project to ensure that it is completed successfully. Further study at A-level develops the student's project management skills.
2	- A wireframe design is a technique for designing a digital product such as a User Interface. The design includes a sketch of each screen or main component part of the UI along with annotations describing the look and function of the main UI elements. - The designs include all the main elements and explain the chosen layout, use of whitespace and colour on each screen. - The designs include descriptions of how the UI is intended to be used, for example, including instructions about how to use the navigation, input and output features of the UI. - Designs will also describe the accessibility features planned for the UI and explain how they intend to aid the user experience.	- You will use Microsoft PowerPoint to create a wireframe design for each screen of your User Interface. - Your designs will be annotated to describe and justify the features of the design such as intended colour schemes, layouts and use of navigation and whitespace. - The designs you produce should include features that meet the project and user requirements detailed in your analysis of the project briefing. These features will be explained and justified by your annotations. - Your designs and annotations will include details on how the user will interact with the system. This should include navigation features, input and output screens. - Your designs will include accessibility features which will help people easily use the UI. These features are primarily aimed at people with accessibility issues but may be useful for all.	Year 8 topic 1 Vector Graphics introduces some of the basic principles of colour and computer graphics. Year 9 Topic 1 Going Audio-Visual builds on the learning from year 8 to give students the chance to practice creating digital graphics and sounds. Year 9 topic 4 App Development teaches students how to design an App. This includes how to make the app suitable for the end user and how to effectively use design principles. Further study at A-level develops these ideas and skills further.
3	- User interfaces are made up of interactive screens that process user input and produce feedback and output to the user. - The design of User Interfaces is heavily influenced by design principles and design psychology. - Navigation methods enable a user to move around a user interface by moving between screens, opening and closing pop-ups etc. They include navigation buttons, forward and back buttons, breadcrumbs and hyperlinks. - There are a range of accessibility methods meant to improve ease of use of digital systems, particularly for people with accessibility needs.	- You will use Microsoft PowerPoint to create your finalised screens of your User Interface based on your initial wireframe designs. - You will expand on your initial designs from task 2 to add additional accessibility and navigation features, while improving the design and user experience. You may also need to make changes due to the limitations of using PowerPoint for UI development. - You will use a combination of hyperlinks, popups, animations and sounds to implement a working prototype of your screens with usable navigation buttons, help popups, sounds, animations and other features. - You will ensure that your final prototype makes good use of design principles including colour, whitespace, layout and consistency appropriate to the target audience.	Year 8 topic 1 Vector Graphics introduces some of the basic principles of colour and computer graphics. Year 9 Topic 1 Going Audio-Visual builds on the learning from year 8 to give students the chance to practice creating digital graphics and sounds. Year 9 topic 5 App Development teaches how to create an App prototype in PowerPoint. Students are introduced to concepts and techniques that they will utilise in this task.
4	A product evaluation is a report that seeks to assess the strengths and weaknesses of a product. The report will include an analysis of how well the product meets the requirements, how easy it is to use, how accessible the product is, how well project timescales were kept to and how the product could be improved in the future.	- You will write an evaluation of your project. This will include detailed discussion of how the UI prototype you created in task 3 meets the product, project, user and accessibility requirements. - You will theorise about how you could make improvements to the User Interface you created, this could include adding, removing or changing features. You should justify all decisions made in your project and explain how it could have gone better.	Year 9 Topic 6 Project Based Learning has students evaluating their work on the project in a similar way to the task they will need to complete here.

	The knowledge you will need to recall:	How you will apply this knowledge:	This links to:
1	- Understand how data is collected and used by organisations. - Understand the difference between primary and secondary data collection. - Identify the distinct features of data collection such as the size of a sample, when and where the data was collected. - Understand the factors that could affect the quality of data collected.	- Write a report that details the explains how data has been collected by a given organisation and analyse the methods including the reliability - Explain and evaluate the factors that will affect the quality of the data suggesting ways the methods could be improved - Explain and evaluate the possible threats to customers who have data stored about them	Level 3 BTEC IT Unit 5 Data Collection looks at the concept of collected data and how to use it to produce a spreadsheet that meets client requirements.
2a	- Understand how to import and manipulate data so that it can be analysed by the user. - Understand how to include conditional formatting and pane freezing.	- You will import a data set into Excel and then complete a series of data manipulation to the data to make it user friendly. - Undertake a range of data manipulation techniques including formulas and functions to increase usability.	Level 3 BTEC IT Unit 5 Data Collection continues this work and requires a data model to be produced from scratch using data collection from a client. Y7 big data looks at the use of spreadsheets and how data can be manipulated using functions and formulas.
2b	- Understand the different functions that can be used to manipulate data. - Understand how to use a range of formatting techniques to highlight and accentuate data in a spreadsheet.	You will complete the analysis sheet by undertaking a series of formatting/ functions and formulas to ensure the data requested by the customer is displayed	Level 3 BTEC IT Unit 5 Data Collection requires you to manipulate data based on the requirements given in a project proposal. Y7 big data looks at the use of spreadsheets and how data can be manipulated using functions and formulas.
2c	- Know how to create a dashboard using data manipulation tools. - Understand how to create graphs and charts to represent data highlighted by a client. - Understand how to analyse data and use it to draw conclusions.	You will produce a data dashboard using appropriate presentation summaries, methods and features including sparklines, graphs/charts, tables including pivot tables.	Level 3 BTEC IT Unit 5 Data Collection requires students to use a variety of data presentation methods to display their information for a client to understand. Y7 big data shows students how to use data presentation methods.
3a	- Know how to analyse a dashboard to see how effective it is in displaying information. - Be able to identify patterns and trends within a spreadsheet to explain what the show and the conclusions that could be made from them. - Be able to identify errors within the collected data to explain how the data could produce incorrect conclusions.	- Using a provide dataset and dashboard you will undertake some analysis highlighting trends/ patterns and errors. - Using these findings your will draw conclusions using annotated screen shots	Level 3 BTEC IT Unit 5 Data Collection asks students to explain their data presentation methods and draw conclusions from them. Y7 big data shows requires students to analyse data within a spreadsheet.
3b	- Analyse data presentation methods. - Review whether the data presentation methods are accurate and that conclusions that have been drawn match the data presented. - Suggest improvements to data presentation methods that have not met the standard.	- Using the given dataset and dashboard you will write a report that considers the presentation methods used and how it can affect understanding and interpretation of the data presented - In your report you will also suggest justified improvements to prevent misinterpretation, bias and inaccurate conclusion being drawn.	Level 3 BTEC IT Unit 5 Data Collection requires the students to produce an evaluation of their data model and explain what they could have done differently if given another opportunity. Y7 big data gets students to explain the different types of data presentation methods.

	The knowledge you will need to recall:	How you will apply this knowledge:	This links to:
A1	- Setting up ad hoc networks and factors that can affect them. - The features and uses of cloud storage. - The features and uses of cloud computing. - How the cloud platform and services chosen can affect an organisation. - How cloud and 'traditional' systems can be used together to make the workplace more efficient. - The implications for organisations when choosing cloud technologies to implement.	- You will explain how different ad hoc networks are set up including the consideration of connection and workload. - You will need to explain the assess and drawbacks of using cloud systems for both an individual and a business and justify why a company or individual would choose to use cloud storage. - You will need to assess cloud computing and the features that it can offer to organisations. - You will need to assess the different platforms and services offered by cloud storage and computing companies and discuss the benefits and the drawbacks of the different levels of service. - You need to explain how an organisation's existing traditional systems can be used together with the cloud systems to make a workplace more efficient and be able to explain in detail how they can work together. - You will evaluate the implications of organisations choosing cloud technologies.	BTEC Level 3 IT Unit 1 LAB looks at how different available networks transmit data.
A2	- Modern technologies have impacted how teams and work practices operate such as world teams, 24/7/365, flexibility and inclusivity. - Communication and collaboration can be facilitated using modern technologies. - Modern technology can aid an organisation's accessibility and inclusivity. - Positive and negative impacts of modern technologies on organisations. - Positive and negative impacts of modern technologies on individuals.	- You need to explain how modern teams have changed due to the introduction of modern technologies, such as Teams, Zoom and 24/7/365 availability due to the geographical factor of hiring being removed. - You will explain the uses of collaboration tools to manage teams and ensure efficiency. - You will explain how modern technologies can be used to communicate considering the appropriateness of the given situation. - You will explain how modern technologies have enabled inclusivity and accessibility for workers including the introduction of remote working. - You will assess the impact of modern technologies on organisations and individuals in given scenarios.	Year 8 Topic 5/6 students completed a physical computing project using modern technology.
B1	- The different reasons why people would choose to attack a network. - External threats being the threats that come from outside of an organisation to digital systems and data security. - Internal threats to data and digital systems come from within an organisation. - The impacts of a security breach to both the organisation and the data that it holds.	- You will need to describe and explain the different reasons someone would choose to attack a network. - You will need to identify and explain the different types of external attacks such as malware and social engineering. - You will need to explain how a system can be attacked internally and how this can be prevented/mitigated. - If a company is attacked, you need to evaluate the impact this could have on the customers such as financial loss or a identify theft. - You will also need to analyse the damage to the company of a data breach.	Year 7 Topic 4 looks at the concept of E-safety and how malware and social engineering techniques can be used to access a network without authorisation. BTEC Level 3 IT Unit 1 Information Technology systems LAD protecting data and information looks at the threats to data information and systems and builds upon the knowledge learnt in this topic.
B2	- The different types of user access restrictions that can be utilised within a network to prevent and manage threats to data. - Data level protection policies that can be implemented to prevent and manage threats to data. - Finding weaknesses with an organisation's current system and how to improve its security.	- You need analyse the different user access restrictions that can be used and evaluate their effectiveness. - You will need to explain how data level protection properties keep the information within a business safe - Explain the procedures for backing up and recovering data with an organisation if something where to happen. - You will also need to explain the concept of encryption, how it works and why an organisation would choose to use it. - You need to explain the concepts of ethical hacking and penetration testing as methods of finding weaknesses within systems so they can be fixed to mitigate potential risks.	BTEC Level 3 IT Unit 1 Information Technology systems LAD protecting data and information looks at protecting data and the systems and procedures that could be used to protect the data of individuals and organisations.
B3	- Defining responsibilities within a business for the handling of data, including protection and back up policies. - Defining the security parameters with the business such as acceptable use policies and what could be included in them. - Explaining what a disaster recovery policy is and what information should be included in it. - The actions taken should a system attack occur. These are often dependent on the outcome and severity of the attack.	- You will need to explain what responsibilities employees hold within the business in terms of data protection and what responsibilities are given to specific employees in the recovery process. - You will need to be able to review, analyse and discuss the use of an acceptable use policy, you need to explain what parameters would be included in one and how they will have an impact on the business for their protection of data. - You will need to describe the purpose and contents of a disaster recovery policy. You will also need to explain what a company needs to include in their disaster recovery policy for it to be successful. - You will have to analyse an attack on a system and plan a set of actions that would need to be taken, given the severity of the attack and the data involved.	BTEC Level 3 IT Unit 1 Information Technology systems LAD protecting data and information looks at the different current legislation and policies that can be used to keep data and information safe within a business and what could happen if the data needed to be recovered.



	The knowledge you will need to recall:	How you will apply this knowledge:	This links to:
C1	- The responsible use of digital systems, including how systems and services share and exchange data. - The benefits and drawbacks of sharing data as well as how data should be used responsibly within an organisation. - The environmental factors of manufacturing, using and disposing of IT systems as well as the implementation of usage and settings policies within organisations.	- You will be required to answer series of questions recalling your knowledge of sharing data. They will always be in the context of a business-related scenario, and you will be asked to explain how and why data is shared and exchanged between parties. - You will draw conclusions from the analysis of both the positive and negative impacts of sharing data. You will be required to explain the benefits and drawbacks of companies sharing your data with third parties. You will also need to explain how data should be used responsibly within a business and how they can ensure your data is being stored and used correctly. - You will apply your knowledge of environmental factors to different styles of questions. You will be asked to explain the different environmental factors that come with the manufacturing, use and disposal of IT systems from an organisations perspective.	BTEC Level 3 IT Unit 1 LAF looks at the moral and ethical issues for individuals, organisations and wider society of the use of IT systems.
C2	- The importance of providing equal access to services and information. - The concept of net neutrality and how it impacts on organisations. - The purpose and use of acceptable use policies within organisations. - Use of social media for business purposes and the impact of personal use of digital systems on professional life. - The 8 key data protection principles and what they mean for individuals and businesses. - Data and the use of the internet regarding the rights of an individual and what data they share with websites,. - The use of intellectual property and the rights surrounding it. - The criminal use of computer systems.	- You will explain how providing equal access to services and information will benefits organisations, individuals and society. - You will need to explain how all internet service providers must treat all internet communications equally, offering users and online content providers consistent rates. - You will explain and analyse an acceptable use policy, including its contents and how its component parts can impact an organisation positively. - You will need to explain how businesses can use social media for their businesses and analyse the current use of social media within an organisation. You will also need to explain how the use of digital devices can affect professional lives. - You will be asked to evaluate the 8 key data protection principles and apply them to different situations within an organisation. - You will need to explain how the data you allow websites to use is processed, stored and shared. You will also explain the rights of an individual around their data and the expectations of the companies storing it to be clear as to what data the use and how it will be used. - You will analyse case studies around the use and rights of intellectual property and how organisations can use intellectual property rights to make more money from their ideas. - You will identify the forms of computer misuse and the relative consequences.	BTEC Level 3 IT Unit 1 LAF looks at the current legislation that a company needs to follow when they are using IT systems and storing the data of individuals. BTEC Level 3 IT Unit 3 is about using social media in business and looks in more depth of the impact it has on organisations and how it can affect work life.

	The knowledge you will need to recall:	How you will apply this knowledge:	This links to:
1	- A Data Flow Diagram (DFD) shows what information will be input into a business information system, how it gets to the next stage in the processing, who inputs it and who receives it. It may also show how and where it is stored. It is used to show, in a graphical way, an overview of a computer system, without going into any detail. - An Information Flow Diagram (IFD) is like a DFD but shows only the exchange of information between individuals or departments. - There are standard symbols that are commonly used in DFDs and IFDs, however alternate sets of symbols are sometimes used.	- You will read a series of information and data flow diagrams and be able to use the information contained in them to explain the systems, data and information that is being represented. - You will draw several data flow and information flow diagrams which accurately and fully explain the systems they represent as well as how data and information passes through those systems. - You will apply your knowledge of the symbols and conventions of DFDs and IFDs to be able to debug and complete diagrams.	Year 7 topic 5 Big Data introduces student to how data is handled by and passed around computer systems. Year 8 topic 3 and 4 Data representation further informs the students about data in computer systems. These and similar diagrams are developed further in study at A-level.
2	- An algorithm is a sequence of steps specifying how to perform a task or solve a problem. - A flowchart is a graphical way of representing an algorithm. Drawing a flowchart is one method that can be used to show the individual steps of a process. A programmer may use a flowchart to work out exactly how to solve a problem. - Standard symbols are used to show the input, processing and output comprising the system. Arrows are drawn to show the direction of flow. By default, the direction is from top to bottom (start to end) of the flowchart.	- You will read a number of flowcharts and apply your knowledge to be able to describe the algorithms they represent. - You will effectively use the standard flowchart symbols to complete, debug and extend a variety of flowcharts. - You will use your knowledge of decisions and repetition to be able to decipher, modify and create flowcharts which include complex loop and decision paths. - You will create a series of flowcharts so that you get used to using them in different contexts and scenarios.	Year 7 topic 6 Programming introduces the basic concepts of sequence, selection and repetition which are key parts of algorithm and flowchart designs. In year 8 topic 6 Physical Computing, students further their knowledge of algorithm development and also learn how computer systems interact with the real world. Year 9 topic 2 and 3 solidify students knowledge of how systems work and introduce the basics of flowcharts alongside implementing them in code.
3	- A computer system consists of hardware and software. The hardware includes input, output, storage and network devices. The software includes all the applications (programs) that the system needs to function. - A system diagram shows how the component parts (hardware and software) of a system are connected. - The individual parts of the system are represented either by boxes or icons. The movement of data between the parts of the system is indicated by arrows, with the direction of the arrow indicating the direction of flow.	- You will apply your knowledge of computer systems and also of system diagrams to create a set of diagrams describing the core components of systems and how they link together to form the whole system. - You will be able to accurately use the arrows to show the correct communication flows between system elements. - You will debug, modify, change and describe existing system diagrams, while ensuring that they remain accurate.	Year 7 topic 2 Networks introduces students to network diagrams which are a type of system diagram, as well as introducing students to several pieces of hardware such as routers and hubs that will be featured in system diagrams. Year 8 topic 2 Inside a Computer builds on students knowledge of core computer components and how they work together. Learning Aim A in this exam unit also uses many of the same components.
4	- Tables are an effective way of displaying information and are much better than using plaintext. Tables make use of rows and columns to help order their data. - Graphs and charts are often an effective way to display information in a useful and user-friendly way. - Written information can also be displayed effectively by incorporating it into tables, charts, graphs and infographics - System documentation is usually provided with new computer systems to aid the user. This is often in the form of user manuals and help-sheets and can be provided printed or electronically.	- You will use your knowledge of tables, charts, graphs and infographics to be able to interpret a given set of data and explain its meaning. - You will modify and improve a series of tables, charts, graphs and infographics to make the information they display clearer. - You will use your skills to determine the best way to represent raw data. You will then create the appropriate data presentation method to accurately and fully display the data set.	Year 7 topic 5 Big Data introduces students to tables, charts and graphs in the form of Spreadsheets. Year 8 topic 3 and 4 Data Representation introduces the students to different ways of representing data and discusses how the format of representation is important. Study at A-level/BTEC Level 3 will further knowledge and application of these skills.