INFORMATION TECHNOLOGY: CAMBRIDGE NATIONALS

What are the aims and intentions of this curriculum?

The main aims of the Cambridge National in IT are to encourage students to:

- Understand and apply the fundamental principles and concepts of IT, including the use of IT in the digital world, Internet of Everything, data manipulation and Augmented Reality ;
- Understand, apply and use IT appropriately and effectively for the purpose and audience;
- Develop learning and practical skills that can be applied to real-life contexts and work situations;
- Think creatively, innovatively, analytically, logically and critically;
- Develop independence and confidence in using skills that would be relevant to the IT sector and more widely;
- Plan, design, create, test and evaluate/review IT solutions and products which are fit for purpose and meeting user/client requirements and apply design and Human Computer Interface (HCI) considerations appropriate for a defined audience;
- Understand the impacts of digital technologies on the individual, organisations and wider society.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Summer 2	Using Augmented Reality to present information.	Planning and design considerations to be considered when designing and producing an AR product. Tools used to design the content and action flow for an AR product. Producing an Augmented Reality (AR) model prototype for standard design conventions. AR information output formats. How to carry out testing of an AR model prototype. Reviewing the process of creating the Augmented Reality (AR) model prototype.	**Creating an AR model prototype. Students can:** • Define what a prototype is and its importance • Explain different types of prototypes and their purpose • Explain the characteristics of a prototype • Identify the most appropriate prototype for the design and development of an AR app. • Identify the different ways in which a prototype could be created. • Use Triggers • Identify Characteristics • Produce Unique products • Use Object recognition • Understand the meaning of Marker-based • Understand the meaning of location based **Understand the following terms:** • Markerless • Superimposition • Single layers	R070: NEA Assessment Exemplar Assignment. Using Augmented Reality to present information (working on). R070: NEA Assessment Coursework.

- Multiple layers
- Access to layers
- Static
- Interactive
- Swipe
- Click/select
- Voice

British Values: Individual Liberty
People are responsible for advances in science and technology. Students recognise that it is important that risks are managed and the consequences considered carefully so that these advance our society.

Careers Links – Programmer, Software Engineer, Robotics Engineer.

Autumn 1	Using Augmented Reality to present information.	R070: NEA Assessment. Using Augmented Reality to present information (working on).	R070: NEA Assessment. Using Augmented Reality to present information (working on). British Values: Democracy Students recognise that they can use their voices to share their thoughts and impact the future. Careers Links – Programmer, Software Engineer, Robotics Engineer.	R070: NEA Assessment Coursework.
Autumn 2	IT in the digital world. Design tools. The Human Computer Interface (HCI) and its use in in everyday life. Different design tools. The difference between data and information.	The different types of design tools that can be used when planning an IT project. The purpose, importance and use of HCI in application areas. Hardware and software considerations when designing an IT solution to a given problem. User interaction methods. The difference between information and data. The use of data types in different contexts. The difference between validation and verification. Data validation tools. Data verification tools. Data collection methods. The storage of collected data. The importance and purpose of testing in different contexts.	Students learn: • The components, advantages and disadvantages of different design tools • The purpose of the Human Computer Interface (HCI). • The advantages and disadvantages of hardware considerations for using an HCI. • The difference between data and information. • Different data types and their characteristics. • Be able to explain and differentiate between validation and verification. • Identify different data collection methods and explain their advantages and disadvantages. • Identify different IT storage media and the advantages and disadvantages of each. • The purpose and importance of testing. PSHE Links – Students learn the legal rights and responsibilities regarding equality (particularly with reference to the protected characteristics as defined in the Equality Act 2010) and that everyone is unique and equal. Students learn the legal rights and responsibilities regarding data protection and the GDPR Regulations and Data Protection Act of 2018.	Assessment Activity: Design tools revision activity. Assessment Activity: What is the HCI and its importance. Assessment Activity: Hardwar, software and user interaction methods. Assessment Activity: The difference between data and information. Different data types. Assessment Activity: The meanings and differences between data validation and data verification Assessment Activity: Different types of validation and verification tools. Assessment Activity: Methods of collecting data and the advantage and

			  British Values: Mutual Respect and Tolerance Students recognise they have the power to influence so should consider how their behaviour, actions and words can affect others. Careers Links - IT Technician, Data Manager.	disadvantages of each type. Assessment Activity: Different storage methods and the advantages and disadvantages of each type. Assessment Activity: How to effectively test a product.
Spring 1	IT in the digital world. Cyber-security and legislation. Digital communications.	Different threats to IT systems. The impact of a cyber-security attack on individuals and/or organisations. Cyber-security attacks prevention measures. The legislation related to the use of IT systems. Types of communication. Software and communications. Different digital I T devices. Distribution channel and the different types. Distribution channel connectivity methods. Audience demographics.	Students learn: • The different types of threats and be able to explain why the threats are used by attackers • How to mitigate against cyber-security threats and different prevention methods. • Identify the potential impact a cyber-security attack can on individuals and an organisation. • Different legislation that applies to cyber-security and its implications. • Digital communication methods and the advantages and disadvantages of each. • Digital devices and their uses. • Different connectivity methods and the advantages and disadvantages of each. Consideration of audience and purpose when using digital devices.	Assessment Activity: Different threats to computer systems. Assessment Activity: What are the potential impacts of a cyber-security attack? Assessment Activity: How can you prevent cyber-security attacks? Assessment Activity: Legislation relating to the use of computer systems. Assessment Activity: Communication types and the advantages and disadvantages of each. Assessment Activity: The characteristics of

			PSHE Links – Students learn the legal rights and responsibilities regarding equality (particularly with reference to the protected characteristics as defined in the Equality Act 2010) and that everyone is unique and equal. Students learn the legal rights and responsibilities regarding data protection and the GDPR Regulations and Data Protection Act of 2018. Students learn the legal rights and responsibilities regarding computer misuse and the Computer Misuse Act of 1990. Students can identify and act upon online risks, including that any material someone provides to another has the potential to be shared online and the difficulty of removing potentially compromising material placed online. Students are aware of the importance of not providing material to others that they would not want shared further and not to share personal material which is sent to them. Supports students in developing understanding of Next steps: skills for further education, employment and career progression. British Values Individual Liberty People are responsible for advances in science and technology. Students recognise that it is important that risks are managed and the consequences considered carefully so that these advance our society. Careers Links - Network Manager, IT Technician, Data Manager, Information Security Manager, Cyber Security Engineer, Senior Engineer – Security and Infrastructure, Cyber Security Engineer Apprentice.	different digital devices and different distribution channels. Assessment Activity: The advantages and disadvantages of different distribution channels. Distribution channel connectivity. Assessment Activity: Audience demographics.
Spring 2	IT in the digital world. Internet of Everything (IoE)	What is the Internet of everything, the four pillars,	Students learn: • What is meant by the IoE and know how the	Assessment Activity: What is the IoE and the four pillars?

		applications and application areas in everyday life.	World Wide Web (WWW) and the Internet are used in the use of the IoE. • Know the four pillars that make up the IoE and understand the interaction between them. • Explain the advantages and disadvantages of the IoE PSHE Links – Students learn the legal rights and responsibilities regarding data protection and the GDPR Regulations and Data Protection Act of 2018. Students learn the legal rights and responsibilities regarding computer misuse and the Computer Misuse Act of 1990. Students can identify and act upon online risks, including that any material someone provides to another has the potential to be shared online and the difficulty of removing potentially compromising material placed online. Students are aware of the importance of not providing material to others that they would not want shared further and not to share personal material which is sent to them. Supports students in developing understanding of Next steps: skills for further education, employment and career progression. British Values Individual Liberty People are responsible for advances in science and technology. Students recognise that it is important that risks are managed and the consequences considered carefully so that these advance our society. Careers Links - IT Manager, IT Technician, Cyber Security Engineer.	Assessment Activity: IoE applications. Practice full paper assessments.
Summer 1	IT in the digital world.	R050: NEA Assessment. IT in the digital world (working on).	• R050: NEA Assessment. IT in the digital world (working on).	R050: NEA Exam Preparation.

		PSHE Links - Supports students in developing understanding of Next steps: skills for further education, employment and career progression. British Values - Mutual Respect and Tolerance Students recognise they have the power to influence so should consider how their behaviour, actions and words can affect others. Careers Links - IT Manager, IT Technician, Cyber Security Engineer.	Practice full paper assessments.