INFORMATION TECHNOLOGY

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
Autumn1	• Planning and designing the spreadsheet solution • Human Computer Interface (HCI) design conventions and principles • Types of outputs that clearly present information for an organisation	**Knowledge** Identify why it is necessary to design a spreadsheet solution. **key terms** ▪ Planning ▪ Functionality ▪ Navigation ▪ Outputs (Charts, Lists,Invoices, Reports) ▪ Worksheets ▪ Design tools ▪ Flowchart ▪ Mind map ▪ Story board ▪ Visualisation diagram ▪ Wireframe ▪ Human Computer Interface (HCI) ▪ User Aids ▪ Validation ▪ Accessibility	**Students will develop the following skills:** ➢ Planning Requirements ➢ Use of planning tools (Wireframe, story boards, mind maps, visualisation diagram and flowcharts) ➢ Understand the importance of considering the outputs that need to be created. • Different types of output. • An understanding of house style and its meaning. • How to produce effective navigation systems including presentation skills and content. • How to create an effective spreadsheet solution plan PSHE Links – Healthy eating Students should know what constitute a	**FORMATIVE:** • Group Presentation • Worksheet • Homework **SUMMATIVE:** • End of Month test .

		• Learnability • Memorability • User perceptions	healthy diet. Students learn more about making calculation of calories in different scenarios. They also learn about the impact of certain foods on one's diet **Career Links -** Accountant, Finance (Banking, Financial Analyst,) Administrative assistant,Stock Brokers, Project managers, Data Manager, Business Analyst, Sales Management, Retail Manager, Statistician, Market Researchers	

Term	Topics	Knowledge and key terms	Skills developed	Assessment

Autumn 1	• Creating the spreadsheet solution
	• Use spreadsheet tools and techniques to create the solution
	
	• Testing the spreadsheet solution
		Knowledge
		○ Students learn how to use different techniques to generate a solution using different types of Data manipulation(Formulas, functions, cell formatting) and
		○ outputs such as charts and graphs, and a HCI to navigate the solution. Students learn how to create effective user interfaces.
		○ Students learn how to test the user interface and the technical aspects of the spreadsheet solution and evaluate it effectively.
		
		key terms
		   ▪ Data manipulation
		   ▪ Formulas
		   ▪ Sorting
		   ▪ filters
		   ▪ Data validation checks
		   ▪ Lookup techniques
		   ▪ technical testing
		   ▪ usability testing
		   ▪ Test plan
		   ▪ Data types
		   ▪ Pivot tables and charts
		   ▪ drop down lists
		   ▪ radio buttons
		   ▪ tick list.
		   ▪ buttons
		   ▪ macros
		   ▪ hyperlinks
			Students will develop the following skills:
			➢ How to apply the following built-in function:
			(SUM, MIN, MAX, AVERAGE, COUNT, IF, COUNTIF, LOOKUP, VLOOKUP, HLOOKUP, AND, OR, DATE, TODAY, SUMIF, SUBTOTAL.)
			➢ How to create outputs which are fit for audience and purpose
			➢ How to create HCI within a spreadsheet.
			➢ accurately record their findings.
			➢ How to create an effective spreadsheet solution that is fit for purpose using formula, functions, macros
			➢ How to validate and verify text in a spreadsheet.
			➢ How to apply spreadsheet security features.
			➢ How to create and follow effective test plans
			➢ Document evidence of testing using a given test plan.
			➢ Evaluate the success of a spreadsheet solution.
			➢ Evaluate the effectiveness of a HCI created by the student.
			
			PSHE Links – Health and prevention
			Students should know the facts and science relating to allergies, immunization and vaccination
			Students learn more about making calculation of the cost for treatment vs the cost of administering the initial vaccine or preventive
				FORMATIVE:
				• Group Presentation
				• Worksheet
				• Homework
				Assessment Activity: Spreadsheet activity/activities testing different types of output, user interface navigation tools and testing considerations and how to evaluate a spreadsheet product.
				
				SUMMATIVE:
				R060: NEA Assessment. Data manipulation using spreadsheets.

		▪ forms	measure. **Career Links -** Accountant, Finance (Banking, Financial Analyst,) Administrative assistant,Stock Brokers, Project managers, Data Manager, Business Analyst, Sales Management, Retail Manager, Statistician, Market Researchers	
Autumn 2	• Data manipulation using spreadsheets. Creating a spreadsheet solution.	R060: NEA Assessment. Data manipulation using spreadsheets (working on). **Knowledge** Students to apply and transfer knowledge in order to: o Creating the spreadsheet solution o Use spreadsheet tools and techniques and features to create the solution o Testing the spreadsheet solution **key terms** ▪ Planning ▪ User requirements ▪ Designing ▪ Solution ▪ Testing	R060: NEA Assessment. Data manipulation using spreadsheets {working on). ➢ Evaluating a given scenario (Assessment material) ➢ Developing a spreadsheet plan considering the outlined requirements. ➢ Developing a spreadsheet solution considering the outlined requirements and plan that was created. ➢ Test solution and document if requirements were met. PSHE Links – Internet safety and harms Students should be able to identify, prevent and report harmful or unacceptable online behaviors such as identity theft, copyright and plagiarism **Career Links -** Accountant, Finance (Banking, Financial Analyst,) Administrative assistant,Stock Brokers, Project managers, Data Manager, Business Analyst, Sales Management, Retail Manager, Statistician, Market Researchers	R060: NEA Assessment. Data manipulation using spreadsheets.

| Spring 1 | • Planning and design considerations for using Augmented Reality to present information. | **Knowledge**
  o The purpose and uses of Augmented Reality (AR).
  o Types of Augmented Reality {AR) and user interaction.
  o Use of Design tools to design the content and action flow for an AR product (Flow charts, Mind maps, Mood boards)
  o What Virtual reality is and how it differs from augmented reality

key terms
  ▪ User requirements
  ▪ Purpose
  ▪ Target audience
  ▪ Content
  ▪ Assets (Audio, Video, Photographs / images, text)
  ▪ Charts and graphs
  ▪ Hyperlinks / weblinks
  ▪ Triggers
  ▪ Object recognition / marker-based
  ▪ Location (GPS) based / Markerless
  ▪ Superimposition
  ▪ Layers/user interaction
  ▪ Action flow
  ▪ Static
  ▪ interactive | Students learn:
  • The purpose and user requirements of an AR product including meeting the needs of the target audience.
  • How to identify the content and assets required to create an effective AR product.
  • How to use appropriate design tools to support the creation of an AR product.

PSHE Links – Internet safety and harms
Students should be able to identify, prevent and report harmful or unacceptable online behaviors such as identity theft, copyright and plagiarism

Careers Links – Programmer, Software Engineer, Augmented Reality Designer and Developer, Graphic Designers, Interior Designers, Game Designer, Design Architect Robotics Engineer. | **FORMATIVE:**
  • Group Presentation
  • Worksheet
  • Homework

SUMMATIVE:
  • End of Month test |

| Spring 2 | • Types of Augmented (AR), user interaction and layers
• Using Augmented Reality to present information. Designing an Augmented Reality {AR) model prototype.
• Creating an Augmented Reality {AR) model prototype. | **Knowledge**
○ Planning and design considerations to be considered when designing and producing an AR product.
○ Explain the term user interaction/layer showing examples through possible YouTube clips or images
○ Reviewing the process of creating the Augmented Reality {AR) model prototype.

key terms
▪ Virtual reality
▪ Augmented reality
▪ Purpose
▪ Sectors
▪ Uses
▪ Training
▪ Virtual tours
▪ Visualisation
▪ Marketing
▪ Mobile devices
▪ Smart devices
▪ Laptop / PC | Students learn:
• Know the different ways that users can interact with an AR ap
• Know how different sector user different types of user interaction
• The different sectors that use AR and how they use it.
• The different types of devices AR can be used on.
• select appropriate types of Assets and triggers for a defined AR app context
• explain the terms layers/user interaction
• select appropriate forms of layers/user interaction for a defined AR app context
• Create an AR product based on produced design documentation.

Careers Links – Programmer, Software Engineer, Augmented Reality Designer and Developer, Graphic Designers, Interior Designers, Game Designer, Design Architect Robotics Engineer.

PSHE Links – Internet safety and harms Students should be able to identify the similarities and differences between the online world and the physical world | **FORMATIVE:**
• Group Presentation
• Worksheet
• Homework

SUMMATIVE:
• Create an AR product based on produced design documentation. |

| Summer 1 | • Using Augmented Reality to present information. Designing an Augmented Reality {AR) model prototype.
• Creating an Augmented Reality {AR) model prototype.
• Reviewing the process of creating the Augmented Reality (AR) model prototype.
• Testing and reviewing an Augmented reality product. | **Knowledge**
o Plan the design of an AR app for a specified purpose.
o what a prototype is and its importance
o the different types of prototypes and their purpose
o Create an AR product based on produced design documentation.
o How to carry out testing of an AR model prototype.

key terms

▪ User requirements
▪ Purpose
▪ Target audience
▪ Content
▪ Assets
▪ Hyperlinks/weblinks
▪ Triggers
▪ Object recognition/marker-based
▪ Location (GPS) based / Markerless
▪ Superimposition
▪ Layers/user interaction
▪ Action flow
▪ Static
▪ Interactive
▪ Prototype
▪ Functionality
▪ Aesthetics
▪ Real data | • Plan and design an AR model prototype for a defined purpose
• Use a wide range of design tools to design an AR app
• Know how to create a model prototype
• Select and prepare suitable assets for triggers
• Use object recognition / marker-based triggers
• Use location based/markerless triggers
• Use superimposition
• Understand the terms layers/user interaction
• Identify, select and create appropriate layers/user interaction for an AR model prototype for a defined purpose
• Create an AR model prototype based on planning and design considerations and design documentation for a specified context.
• How to effectively test an AR model prototype

PSHE Links – Internet safety and harms Students should be able to discuss how people may curate a specific image of their life online, have over reliance on online relationships and risks associated with them.

Careers Links – Programmer, Software Engineer, Augmented Reality Designer and Developer, Graphic Designers, Interior Designers, Game Designer, Design Architect Robotics Engineer. | **FORMATIVE:**
• Group Presentation
• Worksheet
• Homework

SUMMATIVE:
• Create an AR product based on produced design documentation.
• How to test an AR model. |

| Summer 2 | Using Augmented Reality to present information. | R070: NEA Assessment. Using Augmented Reality to present information (working on sample project). | Students learn to transfer knowledge learnt previously and complete course work assigned.

R070: NEA Assessment. Using Augmented Reality to present information (working on sample project).

PSHE Links – Internet safety and harms Students should be able to discuss how people may curate a specific image of their life online, have over reliance on online relationships and risks associated with them.

Careers Links – Programmer, Software Engineer, Augmented Reality Designer and Developer, Graphic Designers, Interior Designers, Game Designer, Design Architect Robotics Engineer. | R070: NEA Assessment Sample Coursework. |