Year 10 & 11 Topics

In year 10 & 11 we teach the following topics over the course of the year. Each topic draws on prior learning from previous years and builds on understanding from the KS3 programme of study. Each topic develops and deepens the Core knowledge that will underpin all areas of the curriculum at KS4 and KS5.

Component 1 Exploring User Interface Design Principles and Project Planning Techniques

Learning Aim A: Investigate user interface design for individuals and organisations				
Topic	**Rationale**	**Knowledge acquisition**	**Key vocabulary**	**Skills and enrichment**
A1: What is a user interface?	Students need to be able to investigate different types of user interface used by individuals and organisations. They need to understand how they vary across different uses, devices and purposes	Definition of user interface: • Software features • Human features • How software features can be used to facilitate human-device interaction	• Software • Human-device interaction • Software	• independence • problem solving • reading • effective writing • literacy • IT • research • numeracy • communication • working collaboratively • analysis • evaluation • reflective practice • self-management • self-monitoring • note taking
		Types of Interface: • Text-based • Speech/natural language • GUI/WIMPs • Sensors • Menu/forms	• Text-based • Speech • natural language • GUI • WIMPs • Sensors • Menu • forms	
		Range of uses • Computers • Handheld devices • Entertainment systems • Domestic appliances • Controlling devices • Embedded systems	• Handheld devices • Entertainment systems • Domestic appliances • Controlling devices • Embedded systems	

Topic	Rationale	Knowledge acquisition	Key vocabulary	Skills and enrichment
A1: What is a user interface? (continued)		Factors affecting choice of user interface • Performance/ response time • Ease of use • User requirements • User experience • Accessibility • Storage space	• Performance • response time • User requirements • User experience • Accessibility • Storage	
		Hardware and Software influences • Operating systems/platforms • Type/size of screen • Type of user input • Hardware resources available • Emerging Technologies	• Operating systems • platforms • touchscreen • processing power • memory • Emerging Technologies	
A2: Audience Needs	Students will investigate the varying needs of the audience and how they affect both the type and the design of the interface.	Accessibility needs • Visual • Hearing • Speech • Motor • cognitive	• Accessibility needs • Motor • Cognitive	• independence • problem solving • reading • effective writing • literacy • IT • research • numeracy • communication • working collaboratively • analysis • evaluation • reflective practice • self-management • self-monitoring • note taking
		Skill level • expert • regular • occasional • novice	• Expert • Regular • Occasional • Novice	
		Demographics • age • beliefs/values • culture • past experience	• Demographics • Beliefs • Values • Culture	

Topic	Rationale	Knowledge acquisition	Key vocabulary	Skills and enrichment
A3: Design principles	Students will investigate a wide variety of design principles that provides both appropriate and effective user interaction with hardware devices	Colours • use of limited range of colours • use of organisational house style • ensuring that colours do not clash • use of textures	• House style • Glossy • Corporate textures • Fabric style textures	• independence • problem solving • reading • effective writing • literacy • IT • research • numeracy • communication • working collaboratively • analysis • evaluation • reflective practice • self-management • self-monitoring • note taking
		Font style/size • ensuring text style is readable • use of sans serif fonts for screen reading • avoiding decorative fonts	• Font • Sans serif • Serif • Decorative	
		Language • appropriate for user needs • appropriate for user skill level	• User needs • Language • Skill level	
		Amount of information • appropriate amount of information • appropriate use of white space	• White space	
		Layout • consistency • close to user expectations • important items in prominent positions • grouping related tasks together • use of navigational components • use of input controls	• Consistency • Layout • User expectations • Prominent positions • Grouping • Navigation • Search fields • Breadcrumbs • Icons • Input controls • Dropdown lists • Tick boxes • Toggles	

Topic	Rationale	Knowledge acquisition	Key vocabulary	Skills and enrichment
A3: Design principles (continued)		User perception of: • colour • sound • symbols • visuals	• User perception	
		Retaining user attention • grabbing attention • ensuring screen is uncluttered • clearly labelled items • predetermined/default values • use of autofill • use of tip text	• Pop up messages • Predetermined • Default • Autofill • Tip text • Buttons • Error messages	
		Intuitive Design • graphics for buttons • helpful pop up messages • easy-to-use help feature • ensuring consistency • easy reversal of actions	• Intuitive	
A4: Designing an efficient user interface	Students will investigate techniques that can be used to improve both the speed and access to user interfaces.	• Use of keyboard shortcuts • Informative feedback • Easy reversal of actions • Ensuring buttons/links are distinguishable • Using bigger objects to influence selection and reduce selection time • Making object stand out to reduce focus time. • Placing related objects next to each other to reduce selection time	• Keyboard shortcuts	• independence • problem solving • reading • effective writing • literacy & numeracy • IT • research • communication • working collaboratively • analysis & evaluation • reflective practice • self-management • self-monitoring • note taking

Learning Aim B: Use project planning techniques to plan and design a user interface				
Topic	**Rationale**	**Knowledge acquisition**	**Key vocabulary**	**Skills and enrichment**
B1 Project Planning Techniques	Students will investigate basic planning tools and design methodologies that can be used to plan, monitor and execute projects.	Methodologies • Waterfall • Iterative eg Agile	• Methodologies • Waterfall • Iterative • Agile	• project planning • independence • problem solving • reading • effective writing • literacy & numeracy • IT • research • communication • working collaboratively • analysis & evaluation • reflective practice • self-management • self-monitoring • note taking
		Project Planning Basic Tools • Task lists • Written or graphical descriptions • Mood boards • Mind maps	• Task lists • Mood boards • Mind maps	
B2 Create a project plan **(Basic planning techniques)**	Students will select basic suitable project planning techniques to develop a project plan for the development of a user interface for a given brief.	SMART aims/objectives	• Specific • Measurable • Achievable • Realistic • Timely	• project planning • independence • problem solving • reading • effective writing • literacy & numeracy • IT • research • communication • working collaboratively • analysis & evaluation • reflective practice • self-management • self-monitoring • note taking
		Audience and purpose		
		Project Requirements • User requirements • Output requirements • Input requirements • User accessibility requirements	• User requirements • Inputs • Outputs • Accessibility requirements	

Topic	Rationale	Knowledge acquisition	Key vocabulary	Skills and enrichment
B2 Create a project plan **(Basic planning techniques)** **(continued)**		Constraints • Time • Resources • Task dependencies • Security	• Task dependencies	
		Risks • Potential risks to project • Contingency planning	• Contingency • Risk	
B1 Project Planning Techniques/ B2 Create a project plan **(Advanced Planning Techniques)**	Students will investigate advanced planning tools that can be used to plan, monitor and execute projects. They will select a suitable project planning techniques to develop a project plan for the development of a user interface for a given brief.	Timescales • Overall timescales • When tasks will be completed including sub tasks • Key milestones including iterative points with the user • When resources will be needed	• Timescales • Milestones • Sub tasks • Resources	• project planning • independence • problem solving • reading • effective writing • literacy • IT • research • numeracy • communication • working collaboratively • analysis • evaluation • reflective practice • self-management • self-monitoring • note taking
		Planning tools: • Gantt Charts • Pert charts • Critical Path diagrams	• Gantt Chart • Pert Chart • Critical Path Analysis	

Topic	Rationale	Knowledge acquisition	Key vocabulary	Skills and enrichment
B3 Creating an initial design	Students will create an initial design using design principles.	Produce a design that meets • User requirements • Input requirements • Output Requirements • User accessibility needs	• User requirements • Inputs • Outputs • Accessibility requirements	• project planning • independence • problem solving • reading • effective writing • literacy • IT • research • numeracy • communication • working collaboratively • analysis • evaluation • reflective practice • self-management • self-monitoring • note taking
		Produce a design specification that includes: • Visualisation • Hardware requirements • Software requirements • A test strategy	• Storyboards • Sketches • Visualisation • Design specification • Hardware • Software • Test strategy	
		Produce a design that allows for: • Increased user confidence/familiarity • Reduced learning time or new interfaces/features • Reduced time to complete tasks • Increased user attention • Reduced need for specialised knowledge	• user confidence • user familiarity • learning time • interfaces • user attention • specialised knowledge	

Learning Aim C: Develop and review a user interface				
Topic	**Rationale**	**Knowledge acquisition**	**Key vocabulary**	**Skills and enrichment**
C1 Developing a User interface	Students will use their design to produce a user interface	Features • Awareness of intended device • How user requirements have been met • Overall look and feel • Inputs • Outputs • Navigation methods • Ease of use	• intended device • user requirements • Inputs • Outputs • Navigation	• Advanced PowerPoint Skills • Microsoft Accessibility Features • project planning • independence • problem solving • reading • effective writing • literacy • IT • research • numeracy • communication • working collaboratively • analysis • evaluation • reflective practice • self-management • self-monitoring
C2 Refining a User interface	Students will refine their user interface using an iterative process with potential users.	Refining the designs by: • Presenting the design to potential users • Refining the interface to account for potential user feedback • Repeating the iterative process until the design is complete Document the changes through each iteration	• Interface • Iteration • User feedback • Iterative process	

Topic	Rationale	Knowledge acquisition	Key vocabulary	Skills and enrichment
C3 Review	Students will review the success of the user interface and the use of their chosen project planning techniques.	Strengths and Weaknesses of the user interface eg: • How well user requirements have been met • Suitability for audience and purpose • Ease of use • How effectively the design principles have been met • Areas that could be developed to better meet audience needs/design principles	• User requirements • Audience • Purpose • Suitability • Design principles	• independence • evaluation • analysis • literacy • reflective practice • self-management • self-monitoring
		Strengths and Weaknesses of the project planning techniques • How well the chosen project planning and methodologies met the needs of the task • Project constraints and how they were overcome • Impact of using an iterative design approach • Lessons learned	• Project planning • Methodologies • Project constraints • Iterative design	