ICT

Preparing students for tomorrow, bit by bit

The ICT department will help to create, share, and apply knowledge in all branches of ComputerScience and ICT. We will educate students to be successful, ethical, and effective problem- solvers with a passion to innovate and create, rather than just passive consumers and users of technology. We will develop an understanding and appreciation of all aspects of digital products, from how they work to how they look. We will foster curiosity and encourage exploration to create students who can contribute positively to the well-being of our society and who are prepared to tackle the complex 21st Century challenges facing the world.

Summary focus areas:

- Innovate, create, develop
- Solving 21st Century problems
- Active developers not passive consumers

Autumn		Spring		Summer	
R050: TA1 – Design tools **R060:** TA1 – Planning and designing the spreadsheet solution	**R050:** TA2 – Human Computer Interface in everyday life **R050:** TA3 – Data & Testing **R060:** TA1.2 HCI design conventions and principles	**R060:** TA2 Creating the spreadsheet solution **R060:** TA3 – Testing the spreadsheet solution **R060:** TA4 – Evaluating the spreadsheet solution	**R060:** NEA Assessment (working on)	**R060:** NEA Assessment (working on) **R050:** TA3 Data and testing	**R050:** TA5 – Digital communications **R050:** TA6 – Internet of Everything (IoE)

Homework for ICT is designed to support and extend the students' studies from their lessons. Work may be a mixture of practical, computer-based tasks and paper-based written work or design tasks. Activities set as homework may be:

- Preparatory work or research ahead of a new topic or concept being discussed in lessons.
- Extension work that allows the student to explore a topic in more depth or in other contexts.
- Application work that allows students to practise skills or demonstrate abilities.

Students are expected to spend around an hour on a homework activity each week and work is marked promptly to help students to identify and understand their weaknesses to make incremental improvements over the course of the year.

Unit	Duration (lessons)	Learning Objectives/Outcomes
Design Tools across IT Systems	16	• Summarise the key components, advantages and disadvantages of each of the different design tools that can be used: flow charts, mind maps. • Summarise the key components, advantages, and disadvantages of each of the different design tools that can be used: visualisation diagrams, wireframes • Summarise the types of software that can be used to create the design tools. • Select the appropriate design tool for a scenario. • Identify why it is necessary to design a spreadsheet solution. • Identify the importance of incorporating client requirements into a spreadsheet solution. • Identify the importance of understanding client requirements. • Understand the importance of considering the outputs that need to be created. • Explain the importance of a complete navigation system within a solution. • Create a flowchart and a mind map to represent processes within a solution. • Create a flowchart, a visualisation diagram and a wireframe to represent processes within a solution.
Human Computer Interface	8	• Review the use of HCI in each of the areas identified in the specification. • Explain what processing resources are required for a HCI. • Explain how users interact with computer systems. • Explain how different operating systems enable different interactions. • How different devices enable different interface designs and interactions. • Explain how different digital platforms have different interface designs and components. • Explain the difference between validation and verification. • Explain the importance of using validation and verification tools. • Identify the characteristics of each storage location and device. • Explain the advantages of each storage location and device. • Explain the importance of considering source data. • Describe calculations that need to be carried out, using plain English, rather than in spreadsheet formula format. • Explain why user aids are important for an end user. • Identify a variety of outputs that may be included within a

		solution.
Producing and evaluating a spreadsheet solution	16	- Create a spreadsheet incorporating simple formulas and use cell formatting. - Identify the importance of using meaningful naming conventions in components of a solution. - Identify appropriate built in functions to use to create an efficient and effective formula. - Create filters to select data in a spreadsheet. - Use range checks and text length checks to validate data in a spreadsheet - Use a lookup to validate data in a spreadsheet. - Use techniques to limit choice to validate data in a spreadsheet. - Identify how to test and retest, if necessary, a spreadsheet during development. - Document evidence of testing. - Apply cell formatting, including conditional formatting, to a cell(s). - Use different data types effectively within a solution. - Use appropriate security measures in a spreadsheet solution. - Use modelling tools in a spreadsheet solution. - Create a range of outputs that are appropriate and fit for purpose in a spreadsheet solution. - Use techniques to customise the user interface so that it is appropriate for the end user. - Carry out and document effective testing of a spreadsheet solution. - Know when to carry out testing i.e. both during and after development. - Carry out an effective evaluation of a spreadsheet solution, considering client requirements. - Carry out an effective evaluation of a spreadsheet solution, considering HCI design principles and conventions.
R060 Coursework	10	Students to continue with their coursework ready for submission.
Data and Testing	12	- Identify the characteristics of each storage location and device. - Explain the advantages of each storage location and device. - Explain the disadvantages of each storage location and device. - Explain the advantages of each storage location and device. - Explain the disadvantages of each storage location and device.

Digital Communication and Internet of Everything	16	• Explain the purpose and use of different types of communication. • Identify the software used to create the types of communication. • Identify the characteristic of each type of software. • Justify the use of different software for different contexts. • Identify the characteristics of the different digital devices. • Justify the use of the device in different contexts. • Identify suitable distribution channels for different contexts. • Justify the use of a distribution channel for different contexts. • Identify the different audience demographics used by a business. • Explain why a business choose the digital communication type and connection method to use with their business. • Explain what the IoE is. • Explain how the 4 Pillars of the IoE interact. • Describe the use of IoT in different areas of everyday life. • Explain the advantages and disadvantages of the IoE.