



ICT & Computer Science Curriculum Intent

What do students study for each key stage?

Key stage 3

Year 7	Year 8
Unit 1 – Introduction to ICT	Unit 1 – Computer Science Concepts
Unit 2 – The Computer System	Unit 2 – Spreadsheet Modelling
Unit 3 – Spreadsheets	Unit 3 – Python Programming
Unit 4 – Data Handling	Unit 4 – Data Handling
Unit 5 – Programming	Unit 5 – The Internet
	Unit 6 – Game Making

Key stage 4

Computer Science

Component 1	Component 2
<p>Computer systems</p> <ul style="list-style-type: none"> • Systems Architecture • Memory • Storage • Wired and wireless networks • Network topologies, protocols and layers • System security • System software • Ethical, legal, cultural and environmental concerns 	<p>Computational thinking, algorithms and programming</p> <ul style="list-style-type: none"> • Algorithms • Programming techniques • Producing robust programs • Computational logic • Translators and facilities of languages • Data representation

BTEC ICT Level 2 – Digital Information Technology

Component 1	Component 2	Component 3
<p><u>Exploring User Interface Design Principles and Project Planning Techniques</u></p> <ul style="list-style-type: none"> • Explore user interface design and development principles. • Investigate how to use project planning techniques to manage a digital project. • Discover how to develop and review a digital user interface. 	<p><u>Collecting, Presenting and Interpreting Data (Spreadsheets)</u></p> <ul style="list-style-type: none"> • Explore how data impacts on individuals and organisations • Draw conclusions and make recommendations on data intelligence 	<p><u>Effective Digital Working Practices</u></p> <ul style="list-style-type: none"> • Explore how modern information technology is evolving. • Consider legal and ethical issues in data and information sharing.



	<ul style="list-style-type: none"> • Develop a dashboard using data manipulation tools. 	<ul style="list-style-type: none"> • Understand what cyber security is and how to safeguard against it.
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Key stage 5

Computer Science

Component 1	Component 2	Component 3
<p>Computer systems</p> <ul style="list-style-type: none"> • The characteristics of contemporary processors, input, output and storage devices • Software and software development • Exchanging data • Data types, data structures and algorithms • Legal, moral, cultural and ethical issues 	<p>Algorithms and Programming</p> <ul style="list-style-type: none"> • Elements of computational thinking • Problem solving and programming • Algorithms to solve problems and standard algorithms 	<p>Programming Project</p> <p>Pupils will choose a computing problem to work through according to the guidance in the specification.</p> <ul style="list-style-type: none"> • Analysis of the problem • Design of the solution • Developing the solution • Evaluation

BTEC Level 3 ICT

Unit 1 – Information Technology Systems	Unit 2 - Databases	Unit 3 – Social Media	Unit 5 – Data Modelling
<ul style="list-style-type: none"> A. Digital devices in IT systems. B. Transmitting data. C. Operating online. D. Protecting data and information. E. Impact of IT systems. F. Issues. 	<ul style="list-style-type: none"> A. The purpose and structure of relational database management systems. B. Standard methods and techniques to design relational database solutions. C. Creating a relation database structure. D. Evaluating a database development project. 	<ul style="list-style-type: none"> A. Explore the impact of social media on the ways in which businesses promote their products and services. B. Develop a plan to use social media in a business to meet requirements. C. Implement the use of social media in a business. 	<ul style="list-style-type: none"> A. Investigate data modelling and how it can be used in the decision-making process. B. Design a data model to meet client requirements. C. Develop a data model to meet client requirements.



What do we think is important about our subject?

ICT

Basic ICT skills & creativity are paramount in young pupils' lives and futures so it is important that we address this throughout a pupils' time at Hilbre. Not only should these skills be enhanced in the department, but across different subjects. It is important for a pupil to have basic ICT literacy to use a computer to facilitate a wider education in other areas of the school. Data modelling (Spreadsheets) & data handling (Databases) combine key skills that are required for pupils and that are transferable to other subjects. By studying these concepts from year 7 & 8, pupils are able to build a strong skill set that will feed into the KS4 & 5 syllabus that we offer as a department. Being able to use the internet effectively and safely is a crucial skill for young people, and this is practiced again from year 7 up to year 13. For some tasks, pupils are encouraged to research new ideas or find a solution to a problem themselves rather than relying on other people to provide an answer for them. Additionally, the Internet unit in year 8 focuses on how we can use the Internet safely and effectively. This links with the KS4/5 options that we offer as a lot of the assignments require effective referring to online sources.

Computer Science

Applying logic, reasoning and problem solving are techniques that are paramount in Computer Science and skills that are frequently used throughout the curriculum. For examples, through addressing different problems in relation to algorithms in year 7 programming. Resilience is a key and this is addressed specifically in the CS units in year 7 & 8, where complex binary calculations are completed/new Python programming language where pupils have to program different solutions to problems throughout the unit. They are continuously faced with errors that they are encouraged to independently solve (much like a programmer in industry needs to) which not only enables pupils to develop these key skills, but also will help them if they chose ICT/CS options in KS4/5.

The curriculum

We have a curriculum that has been developed in a way where content feeds through from year 7 and matches the content covered if pupils decide to stay at sixth form. The resources are in place for almost all lessons, however staff are encouraged to add/tweak aspects of lessons based on their strengths/professional judgements. The lesson objectives will remain the same for the lessons, however if there is a lower ability/higher group then adjustments should be made accordingly by subject teachers.

The impact of ICT & Computer Science across Hilbre students is paramount. Through having a strong ICT/Computer Science skill set, pupils will be more resilient in solving problems in other areas, but also feel empowered to deepen their understanding in other areas through use of the internet & using their ICT skills.



What are the assessments?

KS3

Year 7	Assessments	Year 8	Assessments
Unit 1 – Introduction to ICT	<i>Learner Journal 1</i> – Health & Safety & Effective use of computer	Unit 1 – Computer Science Concepts	<i>Learner Journal 1</i> – Calculating binary/denary & binary addition.
Unit 2 – The Computer System	<i>Monitoring test 1</i> (on Unit 1 & 2)	Unit 2 – Spreadsheet Modelling	<i>Monitoring test 1</i> (on Unit 1 & 2)
Unit 3 – Spreadsheets	<i>Learner Journal 2</i> – Basic spreadsheets & formula/functions	Unit 3 – Python Programming	<i>Learner Journal 2</i> – Python Programming
Unit 4 – Data Handling	<i>Monitoring test 2</i> (on Unit 3 & 4) & <i>Learner Journal 3</i> – Programming concepts.	Unit 4 – Data Handling	<i>Monitoring test 2</i> (on Unit 3 & 4)
Unit 5 – Programming	<i>End of year test</i> (on all units)	Unit 5 – The Internet	<i>End of year test</i> (on all units)
		Unit 6 – Game Making	

KS4

BTEC ICT Level 2 – Digital Information Technology

Component	Assessment
Component 1 - <u>Exploring User Interface Design Principles and Project Planning Techniques</u> <ul style="list-style-type: none"> • Explore user interface design and development principles. • Investigate how to use project planning techniques to manage a digital project. • Discover how to develop and review a digital user interface. 	<i>Learner Journal 1 – User Interface</i> <i>Learner Journal 2 – User Interface Design</i> <i>Assignment 1 – LAA</i> <i>Assignment 2 – LAB</i> <i>Assignment 3 - LAC</i>
Component 2 - <u>Collecting, Presenting and Interpreting Data (Spreadsheets)</u> <ul style="list-style-type: none"> • Explore how data impacts on individuals and organisations • Draw conclusions and make recommendations on data intelligence • Develop a dashboard using data manipulation tools. 	<i>Learner Journal 1 – Spreadsheets</i> <i>Learner Journal 2 – Spreadsheet concepts</i> <i>Assignment 1 – LAA</i> <i>Assignment 2 – LAB</i> <i>Assignment 3 - LAC</i>



Component 3 - Effective Digital Working Practices

- Explore how modern information technology is evolving.
- Consider legal and ethical issues in data and information sharing.
- Understand what cyber security is and how to safeguard against it.

Assessments will be made up of exam questions in relation to topic being taught.

GCSE 9-1 Computer Science

Component	Assessments
<p>Computer systems</p> <ul style="list-style-type: none"> • 1.1 Systems Architecture • 1.2 Memory • 1.3 Storage • 1.4 Wired and wireless networks • 1.5 Network topologies, protocols and layers • 1.6 System security • 1.7 System software • 1.8 Ethical, legal, cultural and environmental concerns 	<p><i>Pupils have end of unit tests that consist of past exam questions from OCR exam creator (these have been made & are available on G drive) to test understanding of a whole unit.</i></p> <p><i>Monitoring 1 – Covering 1.1, 2.1, 1.2, 2.2 & 1.3.</i></p> <p><i>Monitoring 2 – Covering 1.4, 2.3, 1.5, 2.4 & 1.6.</i></p>
<p>Computational thinking, algorithms and programming</p> <ul style="list-style-type: none"> • 2.1 Algorithms • 2.2 Programming techniques • 2.3 Producing robust programs • 2.4 Computational logic • 2.5 Translators and facilities of languages • 2.6 Data representation 	<p><i>Monitoring 3 – Past paper</i></p> <p><i>*These assessments will be different for year 11, where the monitoring assessments/mocks will be full past papers when the course content has been covered.*</i></p>

KS5

BTEC Level 3

Unit	Assessments
<p>Unit 1 – Information Technology Systems</p> <ul style="list-style-type: none"> A. Digital devices in IT systems. B. Transmitting data. C. Operating online. D. Protecting data and information. E. Impact of IT systems. F. Issues. 	<p><i>Pupils have end of unit tests that consist of past exam questions from BTEC/Knowitall ninja (these have been created & are available on G drive) to test understanding of a whole unit.</i></p>



<p>Unit 2 – Databases</p> <p>A. The purpose and structure of relational database management systems.</p> <p>B. Standard methods and techniques to design relational database solutions.</p> <p>C. Creating a relation database structure.</p> <p>D. Evaluating a database development project.</p>	<p><i>Pupils have end of topic tests, and practical assessments throughout lessons to show progress. These have been created & are available on G drive) to test understanding of a whole topic. When the topics have been taught by March of first year – past exam scenarios will be worked through to prepare for exam in May.</i></p>
<p>Unit 3 – Social Media</p> <p>A. Explore the impact of social media on the ways in which businesses promote their products and services.</p> <p>B. Develop a plan to use social media in a business to meet requirements.</p> <p>C. Implement the use of social media in a business.</p>	<p>BTEC coursework:</p> <p><i>Assignment 1 (LAA) – Evaluating the use of social media in business.</i></p> <p><i>Assignment 2 (LAB&C) – Evaluating the use of social media in business.</i></p>
<p>Unit 5 – Data Modelling</p> <p>A. Investigate data modelling and how it can be used in the decision-making process.</p> <p>B. Design a data model to meet client requirements.</p> <p>C. Develop a data model to meet client requirements.</p>	<p><i>Assignment 1 (LAA) – Data models in decision making.</i></p> <p><i>Assignment 2 (LAB&C) – Design, create and evaluate a data model.</i></p>

A level Computer Science

Component	Assessments
<p>Computer systems</p> <ul style="list-style-type: none"> • 1.1 Systems Architecture • 1.2 Memory • 1.3 Storage • 1.4 Wired and wireless networks • 1.5 Network topologies, protocols and layers • 1.6 System security • 1.7 System software • 1.8 Ethical, legal, cultural and environmental concerns 	<p><i>Pupils have end of unit tests that consist of past exam questions from OCR exam creator (these have been made & are available on G drive) to test understanding of a whole unit.</i></p> <p><i>Monitoring 1 – Covering 1.1, 1.2, 1.3, 1.4 & 2.2.</i></p> <p><i>Monitoring 2 – Covering 1.4, 2.3, 1.5, 2.4 & 1.6.</i></p>
<p>Computational thinking, algorithms and programming</p> <ul style="list-style-type: none"> • 2.1 Algorithms • 2.2 Programming techniques • 2.3 Producing robust programs • 2.4 Computational logic • 2.5 Translators and facilities of languages • 2.6 Data representation 	<p><i>Monitoring 3 – Past papers.</i></p> <p><i>*These assessments will be different for year 13, where the monitoring assessments/mocks will be full past papers when the course content has been covered.*</i></p>
<p>Programming Project</p>	<p><i>Ongoing programming project, feedback at each stage (Analysis, Design, Development & Testing/Evaluation) is given to pupils.</i></p>