



Edgbarrow School
Year 12
Computer Science
- Algorithms and Programming



Curriculum Intent

The aim of IT and Computer Science is to develop young people who are digitally literate, resilient and have problem solving skills. Students will develop transferable skills to use across the curriculum, and in the wider world.

What am I studying this year?

Knowledge & Skills	Time of Year	Assessment
Programming Techniques 2.2.1 <ul style="list-style-type: none"> ● Use of an IDE to develop/debug programs ● Programming constructs: Sequence, Selection, Iteration. ● Recursion, its use in comparison to iteration. ● Global and Local Variables ● Modularity and its benefits, Functions and Procedures, Parameter Passing by value & by reference. ● Files 	September / October	End of Unit test Practical programming - Futurelearn
Data Structures 1.4.2 <ul style="list-style-type: none"> ● Arrays, Lists, Dictionaries, Records and Tuples. 	October / November	Exam question
Programming Techniques - <ul style="list-style-type: none"> ● 1D Arrays, 2D arrays. ● Lists. ● Dictionaries. ● GUI 	November / December	Practical programming – Group task
Revision	January	Mock exam - paper 2
Algorithms 2.3.1 <ul style="list-style-type: none"> ● Analysis and design of algorithms ● Standard algorithms (Linear, Binary, Bubble, Insertion, Merge and Quicksort) Measures and methods to determine algorithm efficiency, Big O Notation.	January / February	End of unit assessment
Data Structures 1.4.2 <ul style="list-style-type: none"> ● Stacks and Queues ● Trees, Linked lists and Graphs Algorithm 2.3.1 Algorithms for the main data structures (stacks, queues, trees & linked lists)	February / March	Exam questions
Computational Thinking 2.1 <ul style="list-style-type: none"> ● Thinking Abstractly ● Thinking Ahead ● Thinking Procedurally ● Thinking Logically ● Thinking Concurrently 	March / April	
Computational Methods 2.2.2 <ul style="list-style-type: none"> ● Features that make a problem solvable by computational methods ● Problem recognition ● Problem decomposition 	May	End of unit assessment for 2.1 and 2.2.2 Practical problems to solve as groups or individually

<ul style="list-style-type: none"> ● Use of Divide and conquer ● Use of abstraction ● Application of knowledge of: <ul style="list-style-type: none"> ○ backtracking ○ data mining ○ heuristics ○ performance modelling ○ pipelining ○ visualisation to solve problems 		
Programming techniques 2.2.1 <ul style="list-style-type: none"> ● Object Orientated Programming 	May / June	Practical Programming - Futurelearn 40 mark OOP exam question
Revision	June	Mock - Paper 2
Programming Project Preparation <ul style="list-style-type: none"> ● Problem solving activities ● Project ideas 	July	Practical Problem solving and programming

When and how will I be assessed?

Students will submit work through Google Classroom throughout the year and feedback will be given both verbally and through private comments on Google Classroom to the students where appropriate. Alternatively, feedback will be given in the form of marked exam questions.

End of unit assessments will take place upon completion of each unit of study. These will take the form of exam style questions, sometimes with an additional multiple-choice section.

Revision Guide

Student notes should be used for revision. In order to create these notes, students use the mandatory textbook, as well as Teach-ICT subscription and Isaac Computer Science Access (a variety of sources).

Marking for Literacy

(Longer answers and written work will be marked for at least one of the below, your teachers will tell you which.)

Sp – Spelling mistake of key term

// - Needed new paragraph

C – Capital letter missing

P – Punctuation needed

Expr - Expression

Students will demonstrate pride in their work by:

- Take care of your book and work area. Including Sensible Folder Structure & File Names
- Title and date all work
- Write as neatly as you can in pen and make sure your electronic files are neat & readable.
- Update & improve any incorrect work.
- Upload all work to Google Classroom
- Diagrams, graphs, drawings should all be done in pencil or electronically.