/Computing@Balcarras_

SUBJECT	YEAR	TERM
A-Level Computer Science (OCR)	**12**	**2**

UNIT

Complex Data Structures

INTENT

PRIOR LEARNING (TOPIC) – Basic Data Structures & Advanced Programming

Now armed with a good array of programming skills, pupils are ready to start tackling some of the more complex data structures the course contains. This includes structures such as linked lists, graphs, trees and hash tables. For each, pupils should be confident in explaining how they work not only in abstract terms, but also how the algorithms for key behaviours function.

Specification Points: This unit covers points 1.4.2 and 2.3.1e.

FUTURE LEARNING (TOPIC): Algorithms

IMPLEMENTATION

Throughout the unit pupils will cover:

- The use of linked lists, graphs, trees and hash tables.
- The algorithms for the core behaviours of each of these structures.
- Specific uses of these structures, including building binary search trees.
- Comparing the use of various structures for specific scenarios.

IMPACT

Assessment: Pupils will sit a 40 mark in-lesson assessment at the end of the unit, the score from which will be translated into an A* to E style grading.

In addition to this, pupils will complete regular exam style questions both during lesson and as part of homework tasks.

HOW CAN PARENTS HELP AT HOME?

All course materials are available via Firefly. In the build-up to the assessment, parents can help by supporting their child's revision. This can include testing them using flash cards or simply getting them to explain topics to you.

HELPFUL READING/FURTHER DISCUSSION

READING/EXTRA-LEARNING

There are an enormous number of online courses and tutorials to help pupils develop their computer science skills further.

Visit the Next Steps section of the Computing department's Firefly page for more details.

CAREERS

The skills / knowledge learnt in this unit lead perfectly into a wide range of careers including software development.

WIDER SKILLS

Digital Literacy
Problem Solving
Resilience

VOCABULARY

Linked List, Dynamic, Pointer, Graph, Weighted, Directed, Node, Vertices, Edge, Adjacency, Tree, Root, Leaf, Binary Search Tree, Traversal, Hash Table, Hash Key, Collision, Linear Probing, Chaining.