/Computing@Balcarras_

SUBJECT	YEAR	TERM
A-Level Computer Science (OCR)	**13**	**1**

UNIT

Boolean Algebra

INTENT

PRIOR LEARNING (TOPIC) – Representing Data & System Architecture

At a low-level, computers are made up of logic gates, which in turn are combined to make circuits to perform operations such as addition or storing values. In this unit pupils explore how this happens. Some very simple grounding in this was covered at GCSE, however, this unit quickly goes into a lot more depth. By the end of the unit pupils should be confident in representing and explaining complex Boolean expressions.	**Specification Points:** This unit covers point 1.4.3

FUTURE LEARNING (TOPIC): Post-18 Electrical Engineering Courses

IMPLEMENTATION	IMPACT
Throughout the unit pupils will cover: • Representing logic circuits using circuit diagrams, truth tables and Boolean Algebra. • Using the rules of Boolean algebra, including De Morgan's Law, to simplify Boolean algebra expressions. • Representing Boolean algebra expressions as Karnaugh maps and how to use these to simplify circuits. • The use and behaviour of D type flip flops and adders.	**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	CAREERS	WIDER SKILLS
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.	The skills / knowledge learnt in this unit lead perfectly into a wide range of careers including electrical engineering,	Digital Literacy Numeracy Problem Solving Resilience

VOCABULARY

Gates, AND, OR, NOT, XOR, Truth Table, De Morgan's Law, Distribution, Association, Commutation, Double Negation, D Type Flip Flop, Half Bit Adder, Full Bit Adder, Karnaugh Map.