Holy Family Catholic High School

Subject	Year	Term
Computer Science	12	Spring

Topic
Programming, system software, Computational thinking, software development

Content - Intent

Prior Learning (Topic)	Programming, data structures, data types, boolean algebra, system architecture

The functionality and purpose of the operating system and different types of operating system, applications software, software licences and how source code is translated into executable code.

Programming. The use of an IDE to develop/debug a program, and the fundamentals of programming including recursion and the concepts of OOP, while recognising that some students may have had little previous experience of programming and others will already be seasoned programmers.

What is meant by "computational thinking" in its many forms. Problem recognition and decomposition, abstraction and algorithm design. It covers the topics of backtracking, data mining, heuristics, performance modelling, pipelining and visualisation. Systems analysis methods and algorithm design, programming paradigms, assembly language and the main concepts of object-oriented programming.

Future Learning	Programming, exchanging data, Programming Project

What Knowledge and Skills will be Taught (Implementation)	How will your understanding be assessed and recorded (Impact)
The different types of operating system, utilities, application software. How they are regulated and managed by software companies	Worksheets completed in class and at home and marked. These will be given overall grade based on the quality of the answer and there will also be specific feedback.
In depth understanding of how to use Python and C++ to build applications, including the use of classes and objects. Use of Python and C++ to solve a series of problems using a variety of data structures. Breaking problems down to programmable components. The use of data mining to reveal unexpected patterns from data, heuristics when problems are intractable, pipelining to increase efficiency, and visualisation for humans to understand patters and problems.	Worksheets completed in class and at home and marked. These will be given overall grade based on the quality of the answer and there will also be specific feedback.

How can parents help at home?

Ensure homework is completed on time. Class notes are being finished and summarised at home. There is preparation for in-class tests.

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Helpful further reading and discussion (Including reading and Vocabulary List)	
Reading	**Vocabulary Lists**
<u>Theory textbook –</u> *ISBN 978-1910523056* OCR AS and A Level Computer Science, by Heathcote and Heathcote <u>Programming Textbooks-</u> *ISBN - 978-1910523193* Tackling A Level Projects in Computer Science for OCR H446 *ISBN - 978-1484260463* Modern C++ for Absolute Beginners *ISBN - 978-1838648572* Beginning C++ Game Programming	Normalisation Referential integrity Validation Verification ACID Not D-type flip flop Adder Half adder