Sir John Cass
Sir John Cass's Foundation & Red Coat CofE Secondary School and Sixth Form College

Sir John Cass Red Coat School Programme of Study – Key Stage 5
Subject: A Level Computing

Year 12	Year 13
Topics Covered/ Areas of Focus: Unit 1 COMP1 Problem Solving, Programming, Data Representation 5 and Practical Exercise Unit 2 COMP2 Computer Components, The Stored Program Concept 8 and the Internet	**Topics Covered/ Areas of Focus:** Unit 3 COMP3 Problem Solving, Programming, Operating Systems, 11 Databases and Networking Unit 4 COMP4 The Computing Practical Project
Skills Development & Expected Progress: Unit 1 (exam) ☐ Develop the knowledge the processes of computation and understanding why and where they are important in Computing ☐ Develop skills to Express the solution to a simple problem as an algorithm using flowcharts, pseudo-code or structured English and using formal diagrams ☐ Develop knowledge and skill in programming using the Python programming language. ☐ Develop knowledge of the structured approach to program design and construction ☐ Develop knowledge of binary and denary numbers ☐ Develop knowledge of the the stages of development of a Systems life cycle Unit 2 (exam) ☐ Develop knowledge of relationship between hardware and software ☐ Develop understanding of software and application software ☐ Develop understanding of machine-code language and assembly language ☐ Develop knowledge of Logic gates and develop skills in designing logic gates. ☐ Develop knowledge of Boolean Algebra and develop skills to manipulate and simplify simple Boolean expressions ☐ Develop understating of the Functional Characteristics of a Processor ☐ Develop Understanding of the structure of the Internet, the role of packet	**Skills Development & Expected Progress:** Unit 3 (exam) ☐ Develop the understating of the concept of abstraction as the modelling of a complex system ☐ Develop knowledge of software and hardware present limitations to solving problems ☐ Develop knowledge of the abstract model of the Turing Machine and the Universal Machine ☐ Develop skills of drawing and interpreting state transition diagrams for finite state machines ☐ Develop understanding of the need for and characteristics of a variety of programming paradigms ☐ Develop practical skills of programming using objects to model a simple Problem and develop knowledge of simulations as a computer program or network of computers ☐ Develop skill in using SQL to retrieve, update, insert and delete data from several tables in a relational database Unit 4 (Coursework) ☐ Develop skill in identifying requirements for a computer-based solution to a problem ☐ Develop skills in representing user requirements using suitable diagrams ☐ Develop knowledge of prototyping on the design and development process ☐ Develop skill in creating suitable Human Computer Interfaces ☐ Develop skill in carrying out suitable test strategies

switching and routers Develop skill in creating simple web pages containing hyperlinks	Develop skill in evaluating methods and solutions against the specification and on the basis of effectiveness, usability and maintainability
Assessment: Unit 1 has a 2 hour onscreen exam and counts towards 30% of A-Level. Unit 2 is assessed by a one hour written exam and counts towards 20 % of the A-Level. Pupils will also be assessed on their submitted class work and pupils will evaluate their work and respond to feedback.	**Assessment:** Unit 3 is assessed by a 2 ½ hour exam and counts towards 30% of the A-Level. Unit 4 is internally assessed and counts towards 20% of the A-Level.
Literacy: Key terms are taught explicitly Pupils provide oral and written evaluation of their work Reading comprehension Research	**Literacy:** Key terms are taught explicitly Pupils provide oral and written evaluation of their work Reading comprehension Research
Numeracy: Develop knowledge of binary and denary representation Use Boolean Algebra Algorithm Design Arithmetic operators including modular arithmetic	**Numeracy:** Programming Algorithm
ICT: All aspect of ICT is incorporated in the subject	**ICT:** All aspect of ICT is incorporated in the subject
Life in Modern Britain: Students will cover Social impacts of Computing and gain understanding of social and economic implication of automation and artificial intelligence.	**Life in Modern Britain:** Students will develop awareness of legislation in various areas of computing. Learners will be aware of emerging technologies and appreciate their potential impact on society.
SMSC: Develop knowledge of issues of ownership of information and programs, and the protection of data.	**SMSC:** Develop knowledge of issues of ownership of information and programs, and the protection of data.

Understand the social consequences of current uses of computing. Be aware of emerging technologies and appreciate their potential impact on society. Consider how digital rights can be managed.	Understand the social consequences of current uses of computing. Be aware of emerging technologies and appreciate their potential impact on society. Consider how digital rights can be managed.
Meeting the needs of individual students & Additional Support: Extension and homework clubs are available to support students. Textbooks and online resources are provided to support students' knowledge and understanding.	**Meeting the needs of individual students & Additional Support:** Extension and homework clubs are available to support students. Textbooks and online resources are provided to support students' knowledge and understanding.
Extra-Curricular Activities & Club: Extension and homework clubs are available to support students. Easter-extension classes.	**Extra-Curricular Activities & Club:** Extension and homework clubs are available to support students. Easter-extension classes.
Independent Study/ Homework: Textbooks and online resources are provided to support students' knowledge and understanding from home. Students are expected to spend at least 5 hours every for homework.	**Independent Study/ Homework:** Textbooks and online resources are provided to support students' knowledge and understanding from home. Students are expected to spend at least 5 hours every for homework.
Resources for Learning Support and VLE: Electronic revision material will be available for the exam unit on the Schools VLE Firefly. Learners will provided with additional programmable devices such as Raspberry Pi and control units.	**Resources for Learning Support and VLE:** Electronic revision material will be available for the exam unit on the Schools VLE Firefly. Learners will provided with additional programmable devices such as Raspberry Pi and control units.