

# Scheme of Work

A-Level Computer Science. LVI and UVI ([OCR examinations](#))

11 lessons a week. Two teachers. GTB = 6. PJM = 5

**Examination:** 80% written.

- Paper one computing principles
- Paper two Algorithms and programming.
- Project (20%): Coded solution, externally moderated, internally marked
- The following will have **two iterations**.
  - **Iteration 1** in year one, taught to A-level in each topic.
  - **Iteration 2**, same timing and structure but more on review and securing knowledge and skills, ensuring notes made by students. Also a period a week at least allocated be each teacher (2 periods+ per week) for project work and teacher assistance in class.

	Teacher 1
	Teacher 2

## Iteration for year one and two (see points above)

Topic	Learning objective(s)	Teacher 1 or 2	Term/Sequence	Notes and pupil assessment
<b>Unit 10 - Computational Thinking</b>	Elements of computational thinking. Understand what is meant by computational thinking.	<b>1</b>	<b>Autumn Term</b>	End of topic test using examination questions. Recorded on shared spreadsheet.



<b>Unit 10 - Problem Solving</b>	Problem solving and programming. How computers can be used to solve problems and programs can be written to solve them (Learners will benefit from being able to program in a procedure/imperative language and object oriented language.) We will use python for both.	1	Autumn Term	End of topic test using examination questions. Recorded on shared spreadsheet.
<b>Unit 11 - Programming Techniques</b>	Problem solving and programming. How computers can be used to solve problems and programs can be written to solve them (Learners will benefit from being able to program in a procedure/imperative language and object oriented language.) We will use python for both.	1	Autumn Term Spring Term Summer Term	End of topic test using examination questions. Recorded on shared spreadsheet.
<b>Unit 12 - Algorithms</b>	Data types, data structures and algorithms. How data is represented and stored within different structures. Different algorithms that can be applied to these structures.  Algorithms. The use of algorithms to describe problems and standard algorithms.	1	Autumn Term and Spring Term	End of topic test using examination questions. Recorded on shared spreadsheet.
<b>Unit 3 Software Development</b>	Programs can be written to solve them (Learners will benefit from being able to program in a procedure/imperative language and object oriented language.) Software and software development. Types of software and the different methodologies used to develop software	1	Spring Term	End of topic test using examination questions. Recorded on shared spreadsheet.

<b>Unit 7</b> Data Structures	Data types, data structures and algorithms. How data is represented and stored within different structures. Different algorithms that can be applied to these structures	1	Autumn and Spring Term	End of topic test using examination questions. Recorded on shared spreadsheet.
<b>Unit 1</b> Components of a computer and their uses	The characteristics of contemporary processors, input, output and storage devices. Components of a computer and their uses.	2	Autumn Term	End of topic test using examination questions. Recorded on shared spreadsheet.
<b>Unit 2</b> System software and applications generation	Functions of an OS, Types. The nature of applications and program translators	2	Autumn Term	End of topic test using examination questions. Recorded on shared spreadsheet.
<b>Unit 5</b> Networks and web technologies	Exchanging data. How data is exchanged between different systems	2	Autumn Term	End of topic test using examination questions. Recorded on shared spreadsheet.
<b>Unit 6</b> Data Types	Data types, binary and hex. ASCII and Unicode, Binary arithmetic Floating point and bit wise manipulation	2	Spring Term	End of topic test using examination questions. Recorded on shared spreadsheet.
<b>Unit 8</b> Logic Gates and Boolean Algebra	Data types, data structures and algorithms. How data is represented and stored within different structures. Different algorithms that can be applied to these structures.	2	Spring Term	End of topic test using examination questions. Recorded on shared spreadsheet.

<b>Unit 4</b> Exchanging Data	Exchanging data. How data is exchanged between different systems. Relational Databases	2	Spring and Summer Term	End of topic test using examination questions. Recorded on shared spreadsheet.
<b>Unit 9</b> Legal, ethical moral and social Issues	Legal, moral, cultural and ethical issues. The individual moral, social, ethical and cultural opportunities and risks of digital technology. Legislation surrounding the use of computers and ethical issues that can or may in the future arise from the use of computers	2	Summer Term	End of topic test using examination questions. Recorded on shared spreadsheet.
Internal examination Prep	Past paper, practice and areas to be assessed made clear to students.	1,2	End of Spring Term	
<b>Project introduction and development</b>	To understand the scope of the project. Produce a list of possible problems to solve. Start analysis of identified problem and prototyping.	1,2	Summer Term	
<b>Project development</b>	To complete Project (20%)  Project work in <b>ALL</b> classes and expected to work on outside class in private study and homework time.	1,2	Autumn Term Second Year	Complete coding and write up in this half-term  All information on the project is on the project page on the school website