Curriculum Intent, Implementation and Impact

Subject: Computer Science OCR

Year group: Year 10, Year 11

Periods per fortnight: 5

GCSE Computer Science Specification

Intent:

Our vision in The Buckingham School Computing department is that students are able to build the skills and confidence to understand all aspects of computing, from the impacts of the technology, e-safety to designing programs of their own. Students will develop learnership and independence through use of cooperative learning in the subject.

We aim to ensure that **all** students are able to:

- Understand and apply the fundamental principles and concepts of Computer Science, including abstraction, decomposition, logic,algorithms, and data representation
- Analyse problems in computational terms through practical experience of solving such problems, including designing, writing and debugging programs
- Think creatively, innovatively, analytically,logically and critically
- Understand the components that make up digital systems, and how they communicate with one another and with other systems
- Understand the impacts of digital technology to the individual and to wider society
- Apply mathematical skills relevant to Computer Science.

Curriculum Mapping

IMPLEMENTATION (Year 10):

Term	Topics studied	Extended learning opportunities	How parents could support students
Term 1	1.1 – Systems Architecture: ● 1.1.1 Common CPU Components ● 1.1.1 Von Neumann architecture ● 1.1.1 Fetch Decode Execute Cycle ● 1.1.2 CPU Performance ● 1.1.3 Embedded Systems 1.2 – Memory and storage: ● 1.2.1 Primary Memory ● 1.2.2 Secondary Storage ● 1.2.3 Units ● 1.2.4 Numbers	Flipped Learning via Google Forms: Set 1- Content videos and research websites Set 2: Exam based questions (preparation for assessment) Set 3: Preparation of section summary (linked to specification) - building a student centre revision guide.	Parents can support their child by checking extended learning progress at home and help guide students into creating an effective revision timetable prior to assessment. Effective studying is continuous small amounts over time vs studying the night before. It's testing themselves on the content (practicing questions- recommend flashcards) and doing something with the information vs reading and highlighting. **Useful Websites:** Youtube playlist BBC Bitesize Seneca Learning (OCR Theory) Seneca Learning (Diagnostic/Common Errors) GCSEPod

Term 2	1.2 – Memory and storage: ● 1.2.4 Characters ● 1.2.4 Images ● 1.2.4 Sound ● 1.2.5 Compression 1.3 – Computer networks, connections and protocols: ● 1.3.1 Networks and topologies ● 1.3.2 Wired and wireless networks, protocols and layers	Flipped Learning via Google Forms: Set 1- Content videos and research websites Set 2: Exam based questions (preparation for assessment) Set 3: Preparation of section summary (linked to specification) - building a student centre revision guide.	Parents can support their child by checking extended learning progress at home and help guide students into creating an effective revision timetable prior to assessment. **Useful Websites:** Youtube playlist BBC Bitesize Seneca Learning (OCR Theory) Seneca Learning (Diagnostic/Common Errors) GCSEPod
Term 3	1.3 – Computer networks, connections and protocols: ● 1.3.1 Networks and topologies ● 1.3.2 Wired and wireless networks, protocols and layers 1.4 – Network security: ● 1.4.1 Threats to Computer Systems ● 1.4.2 Identifying the threats and prevention	Flipped Learning via Google Forms: Set 1- Content videos and research websites Set 2: Exam based questions (preparation for assessment) Set 3: Preparation of section summary (linked to specification) - building a student centre revision guide.	Parents can support their child by checking extended learning progress at home and help guide students into creating an effective revision timetable prior to assessment. **Useful Websites:** Youtube playlist BBC Bitesize Seneca Learning (OCR Theory) Seneca Learning (Diagnostic/Common Errors) GCSEPod
Term 4	1.5 – Systems software: ● 1.5.1 Operating Systems ● 1.5.2 Utility Software 1.6 – Ethical, legal, cultural and environmental impacts of digital technology **Programming Theory** ● 2.1.1 Computational thinking ● 2.2.1 Programming fundamentals ● 2.2.2 Data types ● 2.1.3 Searching and sorting algorithms	Flipped Learning via Google Forms: Set 1- Content videos and research websites Set 2: Exam based questions (preparation for assessment) Set 3: Preparation of section summary (linked to specification) - building a student centre revision guide.	Parents can support their child by checking extended learning progress at home and help guide students into creating an effective revision timetable prior to assessment. Parents/Guardians can also support students by practising coding with them at home **Useful Websites:** Youtube playlist BBC Bitesize Seneca Learning (OCR Theory) Seneca Learning (Diagnostic/Common Errors) Seneca Learning (Python Programming) Python Tutorials GCSEPod

| Term 5 | **Programming Basics**
● 2.3.1 Defensive design
● 2.1.2 Designing, creating and refining algorithms
● 2.2.1 Programming fundamentals | Flipped Learning via Google Forms:

Set 1- Content videos and research websites

Set 2: Exam based questions (preparation for assessment)

Set 3: Preparation of section summary (linked to specification) - building a student centre revision guide. | Parents can support their child by checking extended learning progress at home and help guide students into creating an effective revision timetable prior to assessment.

Parents/Guardians can also support students by practising coding with them at home

Useful Websites:

Youtube playlist
BBC Bitesize
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Seneca Learning (Diagnostic/Common Errors)
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GCSEPod |
| Term 6 | **Programming Basics**
● 2.3.1 Defensive design
● 2.1.2 Designing, creating and refining algorithms
● 2.2.1 Programming fundamentals
● 2.2.3 Additional programming techniques | Flipped Learning via Google Forms:

Set 1- Content videos and research websites

Set 2: Exam based questions (preparation for assessment)

Set 3: Preparation of section summary (linked to specification) - building a student centre revision guide. | Parents can support their child by checking extended learning progress at home and help guide students into creating an effective revision timetable prior to assessment.

Parents/Guardians can also support students by practising coding with them at home

Useful Websites:

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IMPLEMENTATION (Year 11):

Term	Topics studied	Extended learning opportunities	How parents could support students
Term 1	**Programming Theory** ● 2.1.3 Searching and sorting algorithms ● 2.4.1 Boolean logic ● 2.5.1 Languages ● 2.5.2 The Integrated Development Environment (IDE) ● 2.2.3 Additional programming techniques	Flipped Learning via Google Forms: Set 1- Content videos and research websites Set 2: Exam based questions (preparation for assessment) Set 3: Preparation of section summary (linked to specification) - building	Parents can support their child by checking extended learning progress at home and help guide students into creating an effective revision timetable prior to assessment. Effective studying is continuous small amounts over time vs studying the night before. It's testing themselves on the content (practicing questions- recommend flashcards) and doing something with the information vs reading and highlighting. **Useful Websites:**

			a student centre revision guide.	[Youtube playlist](#) [BBC Bitesize](#) [Seneca Learning (OCR Theory)](#) [Seneca Learning (Diagnostic/Common Errors)](#) [GCSEPod](#)
Term 2	**Advanced Programming and program design** ● 2.3.1 Defensive design ● 2.3.2 Testing ● 2.2.3 Additional programming techniques ● 2.2.1 Programming fundamentals		Flipped Learning via Google Forms: Set 1- Content videos and research websites Set 2: Exam based questions (preparation for assessment) Set 3: Preparation of section summary (linked to specification) - building a student centre revision guide.	Parents can support their child by checking extended learning progress at home and help guide students into creating an effective revision timetable prior to assessment. Parents/Guardians can also support students by practising coding with them at home. **Useful Websites:** [Youtube playlist](#) [BBC Bitesize](#) [Seneca Learning (OCR Theory)](#) [Seneca Learning (Diagnostic/Common Errors)](#) [Seneca Learning (Python Programming)](#) [Python Tutorials](#) [GCSEPod](#)
Term 3	**Programming Project** ● Design ● Write ● Test ● Refine		Flipped Learning via Google Forms: Set 1- Content videos and research websites Set 2: Exam based questions (preparation for assessment) Set 3: Preparation of section summary (linked to specification) - building a student centre revision guide.	Parents can support their child by checking extended learning progress at home and help guide students into creating an effective revision timetable prior to assessment. Parents/Guardians can also support students by practising coding with them at home **Useful Websites:** [Youtube playlist](#) [BBC Bitesize](#) [Seneca Learning (OCR Theory)](#) [Seneca Learning (Diagnostic/Common Errors)](#) [Seneca Learning (Python Programming)](#) [Python Tutorials](#) [GCSEPod](#)
Term 4	Revision for exams		Independent revision Extended Learning will be exam based questions, depending on QLA	Parents can support their child by checking extended learning progress at home and help guide students into creating an effective revision timetable prior to assessment. **Useful Websites:** [Youtube playlist](#) [BBC Bitesize](#) [Seneca Learning (OCR Theory)](#) [Seneca Learning (Diagnostic/Common Errors)](#) [Seneca Learning (Python Programming)](#) [Python Tutorials](#) [GCSEPod](#)

| Term 5 | Revision for exams | Independent revision

Extended Learning will be exam based questions, depending on QLA | Parents can support their child by checking extended learning progress at home and help guide students into creating an effective revision timetable prior to assessment.

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IMPACT:

Students will be assessed to prove that they have understood and can apply what has been taught at the end of each unit. Students will be tested using GCSE exam style assessments, with flipped learning exam support in place to prepare students for higher level questioning.

Each student will be graded using 1-9, with all sections being assessed in a topic test, allowing for ongoing feedback throughout the course- allowing students to identify areas of improvement and strengths.

The reported grades will be assessed in two cumulative assessments (Nov and May) to prepare and be successful on their final exams at the end of year 11.