# *Computer Science* - Learning Journey Year 11

## Autumn Term

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | |
|---|---|---|---|---|---|---|---|---|---|
| **Topic** | **1.1 Hardware** | | **1.2 Logical Operators** | | | **1.5. Data Organisation**<br>**1.8 Algorithms and Constructs**<br>**2. Investigation, Implementation & Testing**<br>**1.10 Program Construction** | | | HALF TERM |
| **Challenge Objective and Content (for all learners)** | • Consolidation of Hardware unit including Hardware and Architecture, factors effecting performance & embedded Systems<br><br>•Additional Hardware including GPU, Motherboards, Flash and Virtual Memory, Soundcards.<br><br>• Inputs and Output Devices | | • Logical Operators: AND, OR, NOT, XOR.<br>• Truth Tables<br>• Operations<br>• Simplifications<br>• Boolean Algebra: The 8 Laws<br>• Using AND, OR, NOT operators within python coding challenges. | | | • Coding Challenges Using Tkinter GUI forms.<br>• Designing, writing, testing and refining Python 3 code including: Variables, Sequence, Selection, Iteration, Arrays, Lists and File Handling.<br><br>• Experience and understand examples of programming errors.<br>• Sorts and Searches | | | |
| **Inspire Opportunities** | Career related real world context research/questions to inspire students to broaden their understanding of computer science within their own environment. | | To stretch and challenge students will complete complex algorithms using python coding creating quizzes, file constructs and complete various coding challenges. | | | Implementation of theory by creating coded solutions with increasing difficulty to challenge all. | | | |
| **Assessment Opportunities** | Each consolidation unit will have exam questions dispersed throughout to enable students to see a range of exam type questions for the Component 1 examination<br>PLC's will be utilised for students to track their in class learning and revision to prepare them for their final examinations in June. | | Formative assessments throughout utilising MCQ and google forms. | | | Formative assessments throughout utilising MCQ and google forms. | | | |

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | |
|---|---|---|---|---|---|---|---|
| **Topic** | **1.3 Networking and Cybersecurity** | | | **1.6 Operating Systems** | | | CHRISTMAS |
| **Challenge Objective and Content (for all learners)** | • Cybersecurity threats and network protection including Data interception and theft, SQL injection, double authentication & encryption.<br><br>• Consolidation of networking and Cybersecurity unit including; Network characteristics, topologies, hardware, protocols & metrics. The purpose of the Internet, DNS, URL's hosting and the cloud & Factors effecting the performance of networks. | | | • The purpose of the operating system and the components that it manages<br>• The purpose of a range of utility software and their functions | | | |
| **Inspire Opportunities** | Theoretical components combined through the use of revision materials. | | | Theoretical components combined through the use of revision materials. | | | |

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| **Assessment Opportunities** | Each consolidation unit will have exam questions dispersed throughout to enable students to see a range of exam type questions for the Component 1 examination<br>PLC's will be utilised for students to track their in class learning and revision. | Formative assessments throughout utilising MCQ and google forms. | |

## Spring Term

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | |
|---|---|---|---|---|---|---|---|
| **Topic** | **1.4 Data Representation** | | | **1.5. Data Organisation**<br>**1.8 Algorithms and Constructs**<br>**1.10 Program Construction** | **2. Design, Investigate, Implement & Test** | | HALF TERM |
| **Challenge Objective and Content (for all learners)** | • Consolidation of Data representation unit including Binary, Binary Addition and Subtraction, Underflow and Overflow, Sign, Magnitude and Twos Complement, Hexadecimal, Units of measurement and Conversions. | | • Consolidation of Data representation unit including Representation of Characters, Graphics Sound and Compression<br>• Compression Ratios | • Consolidation of key terminology used in Programming and what each one of these looks like in Python. | • Tkinter coding challenges consolidating Component 2 knowledge and structure of examination. | | |
| **Inspire Opportunities** | Theoretical components combined through the use of revision materials. | | | Theoretical components combined through the use of revision materials. | Implementation of theory by creating coded solutions with increasing difficulty to challenge all. | | |
| **Assessment Opportunities** | Each consolidation unit will have exam questions dispersed throughout to enable students to see a range of exam type questions for both the Component 1 and 2 examinations<br>PLC's will be utilised for students to track their in class learning and revision. | | | | | | |

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | |
|---|---|---|---|---|---|---|
| **Topic** | **1.7 Principles of Programming** | **1.9 Software Development** | **1.10 Program Construction** | **1.11 Impacts of Digital Technology on Wider Society** | **Mock Examination Week** | EASTER |
| **Challenge Objective and Content (for all learners)** | • Consolidation of the characteristics and purpose of high-level and low-level languages | • Consolidation of technical terms and uses for Integrated Development Environment (IDE) tools. | • Consolidation of the purpose program translators: compilers, interpreters & assemblers<br>•Learn and understand the five principal stages involved in the compilation process<br>• Be able to experience and understand examples of programming errors. | • Consolidation of the ethical, legal, cultural, environmental and privacy issues linked to the use of computer systems.<br>• The impact of relevant current legislation on Computer Science. | | |

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| | • situations that require the use of a high-level or a low-level languages. | | | | | |
| **Inspire Opportunities** | | | | Career related real world context research/questions to inspire students to broaden their understanding of computer science within their own environment. | | |
| **Assessment Opportunities** | Each consolidation unit will have exam questions dispersed throughout to enable students to see a range of exam type questions for both the Component 1 and 2 examinations<br>PLC's will be utilised for students to track their in class learning and revision. | | | | | |

# *Computer Science* - Learning Journey Year 11

**Summer Term**

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | |
|---|---|---|---|---|---|---|---|
| **Topic** | **Feedback** | **Exam Technique** | **Bespoke Revision** | | | | **HALF TERM** |
| **Challenge Objective and Content (for all learners)** | Feeding back upon the mock examination and guided practice to reflect upon those areas which students need more input | Focusing on exam technique and the best way to answer the examination questions, students will have already been doing this however this will be tailored from the mock examination and the reflections that have occurred from this. | Walking talking Mock papers and other revision activities to ensure students are equipped for both the theoretical examination and the practical on-screen examination.<br>Bespoke timetable depending upon the PLC's and which area's students need to focus on, guided and directed by the teacher. | | | | |
| **Inspire Opportunities** | Revision activities tailored to the needs of the students to enable them to achieve | | | | | | |
| **Assessment Opportunities** | Mock papers and practice questions | | Summer exam | | | | |

| | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | |
|---|---|---|---|---|---|---|---|
| **Topic** | **Yr11 Summer Exams** | | | | | | **SUMMER** |
| **Challenge Objective and Content (for all learners)** | | | | | | | |
| **Inspire Opportunities** | | | | | | | |
| **Assessment Opportunities** | | | | | | | |