



| Computing and ICT | | | | | | |
|--------------------------|--------------------------------|---------------------------------------|--------------------------------|-------------------------------|------------------|--------------------------|
| | Term 1 | Term 2 | Term 3 | Term 4 | Term 5 | Term 6 |
| Year 7 | Introduction to E-Safety | Introduction to Spreadsheet Modelling | Word Processing | Scratch Programming | Digital Graphics | Project |
| Year 8 | Social Media and Cyberbullying | Computer Systems | Web Design & HTML | Databases | 2D Animation | Python Basics |
| Year 9 Computer Science | System architecture | Software | Data representation | Sound images | Logic | Algorithms |
| Year 10 Computer Science | Networks | Protocols | Operating systems and software | System security | Ethics and law | Programming |
| Year 11 Computer Science | Programming | NEA | NEA | Hardware Software Legal | Data Logic | Constructs Algorithms |



Year 11 Curriculum Content Overview 2017-18

Computer Science- Year 11

| Knowledge and Skills Students will be taught to.... | Reading, Oracy, Literacy and Numeracy | Formative Assessment | Summative Assessment | Link to reformed GCSE Content |
|---|---|--|---|--|
| <p>Explain and implement the different types of programming terms: sequence, selection, iteration, constructs, calculations, inputs and outputs.</p> <p>NEA- Project layout: Analysis Design Development Evaluation</p> <p>Discuss the different types of input, output and storage devices. Explain how specialist devices can be used to aid people with disabilities to use a computer.</p> <p>Discuss the differences between open and closed source software. Evaluate the differences between the various utility software included on an operating system.</p> <p>Explain why computers use binary and be able to convert to hexadecimal and binary and back to denary. Evaluate different character sets and why we need multiple sets.</p> <p>Explain what an algorithm is and give examples of search and sort algorithms. Evaluate and use the process of each of the algorithm. Create solutions to various scenarios using both pseudocode and flowcharts.</p> | <p>Reading</p> <ul style="list-style-type: none"> Information from the internet and summarise into own words <hr/> <p>Numeracy</p> <ul style="list-style-type: none"> Calculations Binary Hexadecimal <hr/> <p>Oracy and Literacy (including key words for practical subjects)</p> <ul style="list-style-type: none"> Key terminology Student discussion Student role play with algorithms Written and extended questions | <p>Questioning in lessons</p> <p>Whole class feedback during lessons</p> <p>Low stakes quizzing</p> <p>Exit Strategies</p> | <p>1 Mastery assessment in the academic year.</p> <p>2 PPE Assessments.</p> | <p>NEA</p> <p>Constructs</p> <p>Software</p> <p>Algorithms</p> <p>Binary</p> |



Assessment Skills, Knowledge and Concepts Map (These need to be mapped backwards from GCSE and ensure that all students can access their target percentage) – what do all students need to achieve in year 8 to be able access their target grade and be on track for their year 11 target grade?

| Computer Science- Year 11 | | |
|---|---|---|
| Key Learning Questions | Programming | Reading and Oracy |
| <ul style="list-style-type: none"> • What is sequence, selection and iteration? • How can sequence, selection and iteration be incorporated into algorithms? • How can calculations, inputs and outputs be represented through the use of algorithms? | <ul style="list-style-type: none"> • Explain the differences between sequence, selection and iteration. • Discuss and incorporate sequence, selection and integration into algorithm design. • Incorporate processes, inputs and outputs into algorithm design. | <ul style="list-style-type: none"> • Reading through scenarios • Interpreting information • Student discussion and responses to questions. |
| Key Learning Questions | NEA | Reading and Oracy |
| <ul style="list-style-type: none"> • What is a success criterion? • How would the algorithm work? • Does your end program meet the success criteria? • How well does your program work? • What improvements could be made? | <ul style="list-style-type: none"> • Creation of NEA project: <ul style="list-style-type: none"> ○ Creation of Analysis- Success criteria ○ Creation of Design- Algorithms, Front end design, Test plan. ○ Creation of development- Program, Commenting and discussion ○ Creation of testing and evaluation- Test program, Evaluate the program and your performance. | <ul style="list-style-type: none"> • Reading through scenarios • Interpreting information |
| Key Learning Questions | Hardware, Software and Legal | Reading and Oracy |
| <ul style="list-style-type: none"> • What are the different types of hardware and their uses? • Explain the differences between open and closed source software? • What are the different computer laws? • How have cultural influences effected the use of technology? | <ul style="list-style-type: none"> • Describe the different types of hardware used within a computer system. • Justify the different types of system software and their uses. • Explain computer laws • Describe computer laws for scenarios • Evaluate scenarios by applying laws and ethics | <ul style="list-style-type: none"> • Student discussion and responses to questions. • Extended writing • Writing balanced arguments |
| Key Learning Questions | Data Logic | Literacy and Numeracy |
| <ul style="list-style-type: none"> • How do computers store information through the use of binary? • Explain how sampling is used to store data in regards to sound recordings. • Explain how images are stored through the use of pixels and how these are represented in binary? • Explain how logic gates are incorporated together to make a circuit? | <ul style="list-style-type: none"> • Explain why computers use binary • Convert to hexadecimal • Evaluate different character sets • Interpret logic circuits • Create truth tables based on logic circuits. | <ul style="list-style-type: none"> • Calculations in binary • Converting to hexadecimal • Converting to binary • Interpretation of logic circuits |



| Key Learning Questions | Constructs and Algorithms | Literacy/ Numeracy |
|---|---|---|
| <ul style="list-style-type: none">• What are the different constructs which can be incorporated into a program?• Create an algorithm which fits the purpose of the given scenario.• What is a search and a sort used for?• How does merge, insertion and bubble sort work?• How does binary and linear search work? | <ul style="list-style-type: none">• Discuss and implement the different programming constructs used with a program.• Interpret information and based on these draw an efficient algorithm.• Explain what an algorithm is• Give example of search and sort algorithms• Explain and use the process of each of the algorithms | <ul style="list-style-type: none">• Interpreting scenarios• Problem solving using mathematical calculations.• Searching and sorting number/alphabetical data• Calculating the most efficient sort/search algorithm |